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AFTER BUSINESS HOURS

Alfred Nobel—Lover of Peace

(By Nigel Neil)

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THE recent awarding of the Nobel Peace Prize to Dr. Ralph Bunche, formerly acting United Nations' mediator in Palestine, served once again, not only to focus the thoughts of men on Alfred Nobel, the great Swedish inventor, patron of the arts and sciences, and lover of international peace but also to demonstrate that the terms of his will are being strictly observed both in the spirit and in the letter. For the concluding paragraph of that will is to the following effect: "I declare it to be my express desire that, in the awarding of prizes, no consideration whatever be paid to the nationality of the candidate; that is to say, that the most de-

serving be awarded the prize, whether of Scandinavian origin or not."

This writer believes that Alfred Nobel would have derived deep satisfaction from the fact that at the turn of the half-century his Peace Prize should have been awarded to a member of the erstwhile despised coloured races, awarded for the skill and tact and splendid understanding which were responsible for the signing of the armistice agreements between the Arab countries and Israel.

Who was this Alfred Nobel, who, on the one hand, gave the world dynamite with its immense powers of destruction, and on the

other, strove zealously during his life for world peace and at his death willed that a considerable portion of his vast fortune should be paid yearly to those who worked most earnestly for its advancement?

As a matter of fact, there is no incongruity between his two courses of action. For when Nobel invented dynamite, he visualised it not as an instrument of destruction, but as an instrument of human betterment—notably for blasting operations in mines and for railway tunnelling. Indeed, on one occasion he even went so far as to express the opinion that by the invention of his high explosives he had made an important contribution to world peace in that no one would dare to make use of them in view of their destructive effects.

What would he have thought, one wonders, of World War I and World War II—with World War III already an ominous threat?

Nobel was born at Stockholm on October 21st, 1833, in a poor home. He was the son of Immanuel Nobel Junior, who at the time of Alfred's birth was in particularly straightened circumstances. The father was what may be termed a natural genius. For, despite the fact that he had no technical education whatever, his native gifts alone enabled him to become a great inventor. His three sons, Robert, Ludwig, and Alfred, were all men of outstanding character and ability.

At the early age of nine, Alfred left his native Sweden, accompanying his family to St. Petersburg. And for the rest of his life he was a cosmopolitan. Indeed, he was once jokingly described as "Europe's richest vagabond."

When he was about sixteen, he was sent to pursue his studies in Germany, France, England, and the United States. He was a remarkably gifted linguist, speaking Russian, German, French, Italian, and English with a fluency far beyond the attainment of the average foreigner.

It is interesting to us of British stock to reflect that the English poet, Shelley, had a profound influence on Nobel from his earliest youth. It was from him, indeed, that Nobel acquired "his hatred of war, his advocacy of

peace, and his burning love of liberty."

It was in May or June of 1862 that Alfred Nobel, in the presence of his brothers, Robert and Ludwig, succeeded for the first time in causing nitro-glycerine to explode, and, as a matter of fact, to do so under water, and on October 14th, 1863, he received his first patent for this product.

Ultimately Alfred Nobel started in Sweden the world's first factory for the manufacture of nitro-glycerine. He had, however, comparatively little to do with its running—having bigger and wider schemes being engaged in patenting his inventions in all countries; founding companies and setting up factories. Meanwhile his inventive gifts were concentrated on the problem of discovering a safe method for the transport of nitro-glycerine.

By 1866, he had arrived at a more or less practical solution of the difficulty, namely, to induce the absorption of nitro-glycerine by a solid substance, thereby making it available for use in a less dangerous and more practical form.

It may be said that when Nobel finally decided in favour of Kieselguhr, as the most efficient absorbent, dynamite was born.

Within the following seven years, dynamite factories were founded by Nobel in Sweden, Norway, Germany, Bohemia, the United States, Finland, Scotland, France, Spain, Switzerland, Italy, Portugal, and Hungary.

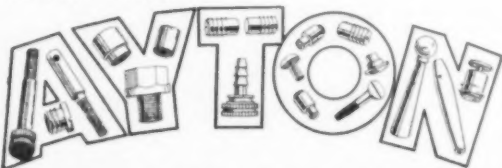
In 1887 and 1888, Nobel patented a smokeless powder which he called ballistite. This consisted of approximately equal parts of nitro-glycerine and nitro-cellulose, with an addition of 10 per cent. of camphor.

Down the subsequent years, Nobel was busy improving his inventions: keeping a keen eye on his virtually world-wide manufacturing operations; and facing up to the worry and mass of work incidental thereto.

He found time, nevertheless, to interest himself deeply in literature, English literature in particular. At the same time, he kept fully abreast of literary happenings in his own country, in

(Turn to page 52.)

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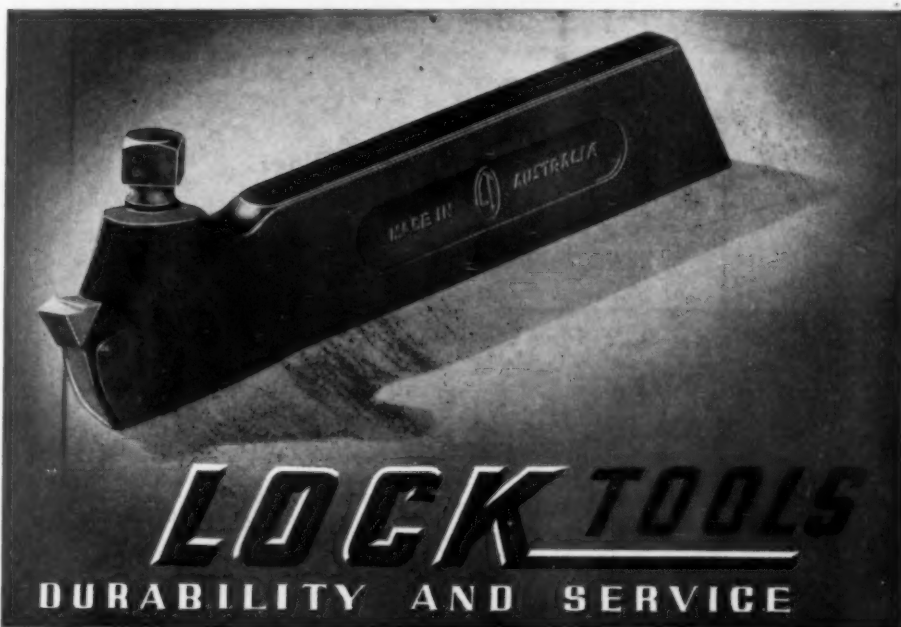
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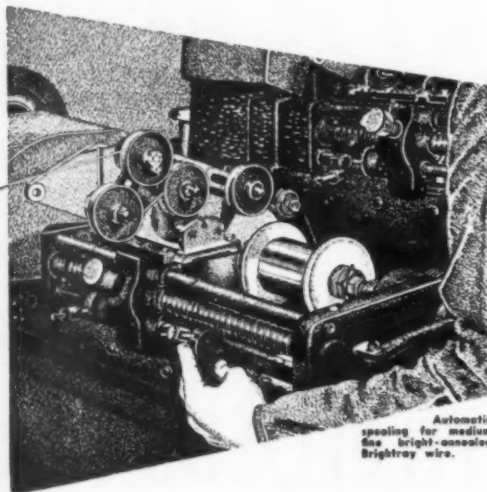


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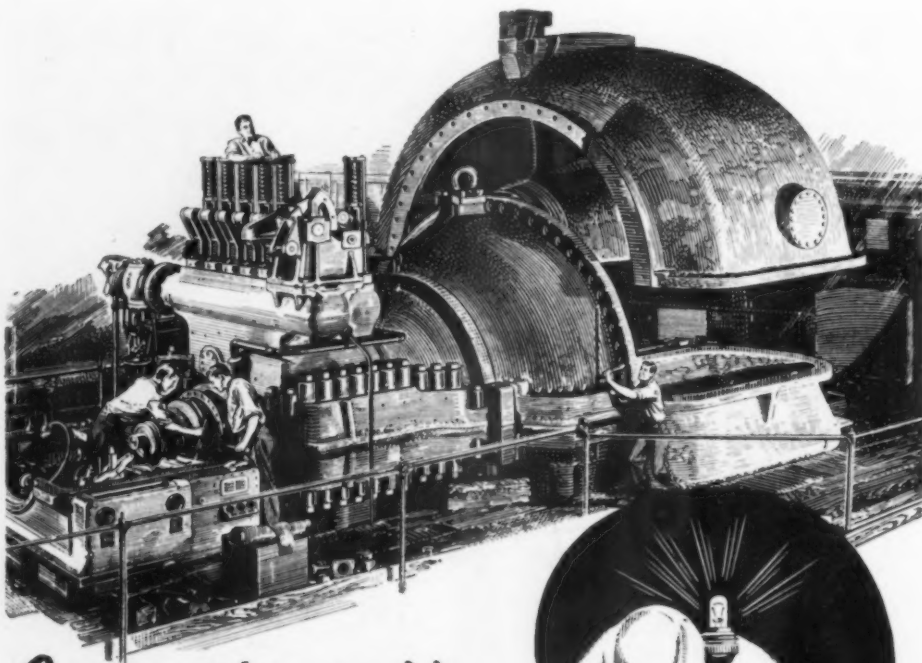
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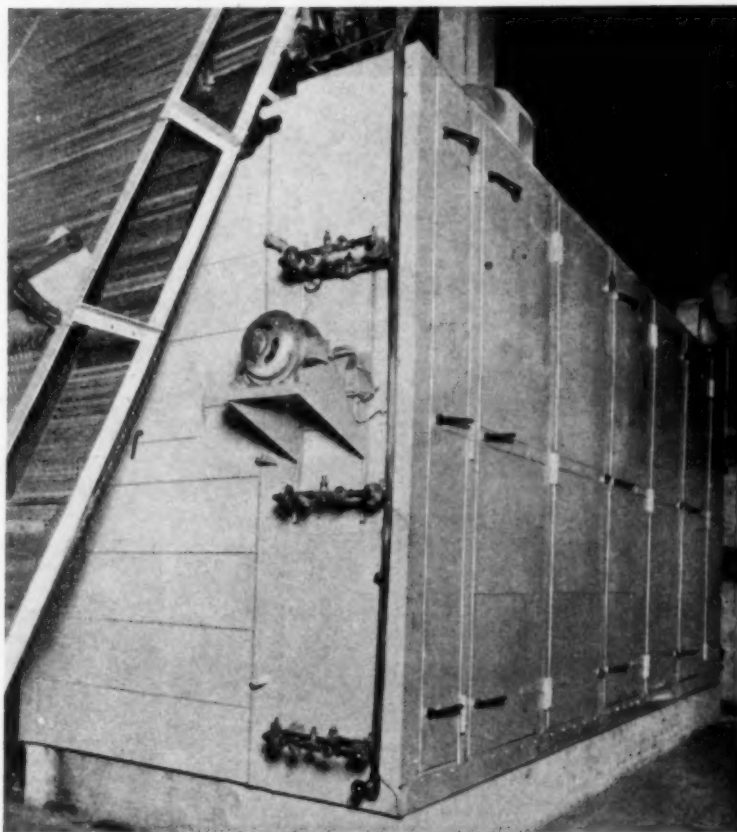
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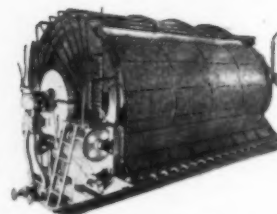
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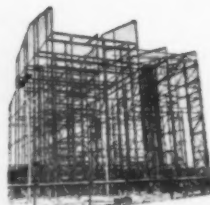
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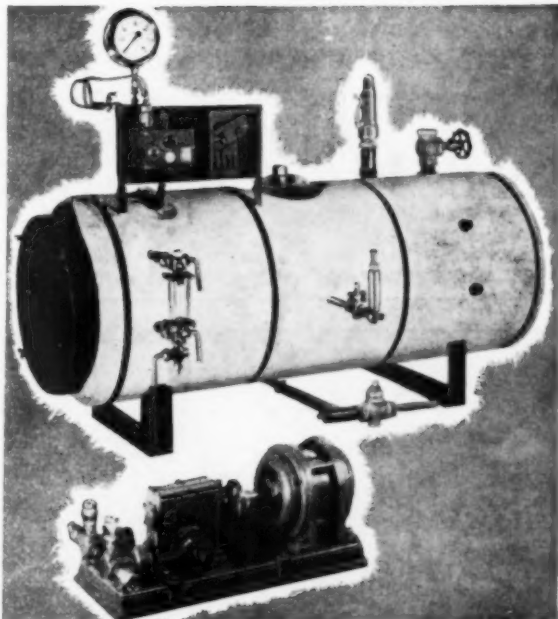
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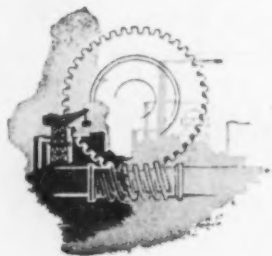
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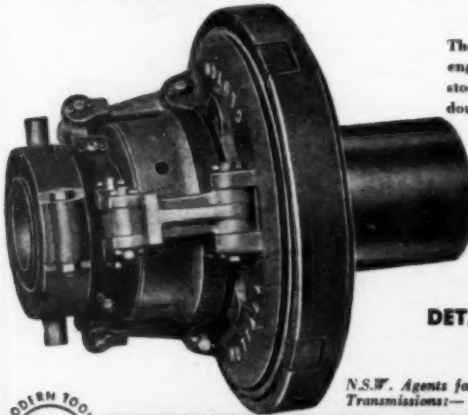
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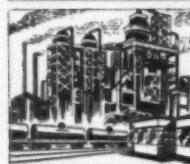
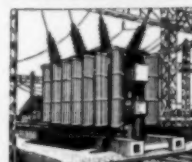
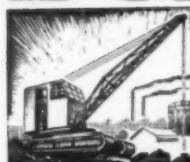
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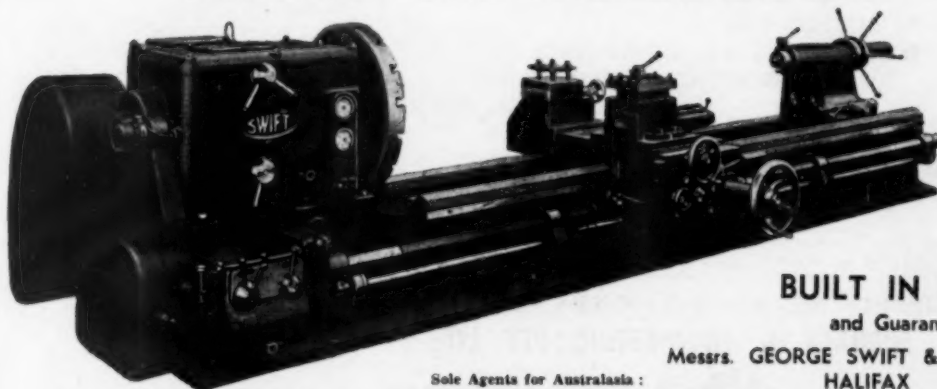
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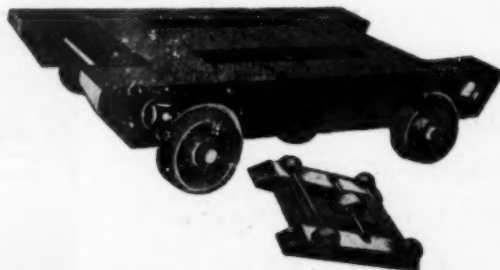
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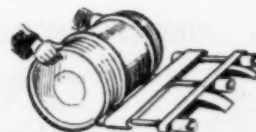
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This new instrument provides an improved method of firing explosive charges which brings many advantages. Improved safety features, reduction of concussion, greater yield and better fragmentation result from this development of Sequential Shot Firing. This instrument has been proved by actual tests on the field and is now widely in use, particularly in N.S.W.

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It is simple and easy to use and, as far as possible, it has been made



fool-proof. No specialised knowledge is required to use the Sequential Exploder, and a special removable key is provided with each instrument so that when the instrument is set no premature firing can be done until the setting key is removed from its socket and placed in the firing position socket.

The batteries are easily replaceable and plug into the instrument. No soldered connections or joints have to be made. The batteries are of a standard type and can be purchased anywhere.

This represents an outstanding advancement in firing technique for explosives and will, undoubtedly, fulfil a long-felt want in that part of industry that relies on blasting for so much of its work.

The instrument is supplied complete with batteries and weighs 11½ lbs. The size, excluding handle, is 15½ in. x 8 in. x 4½ in.

Enquiries are invited and an illustrated leaflet is available.

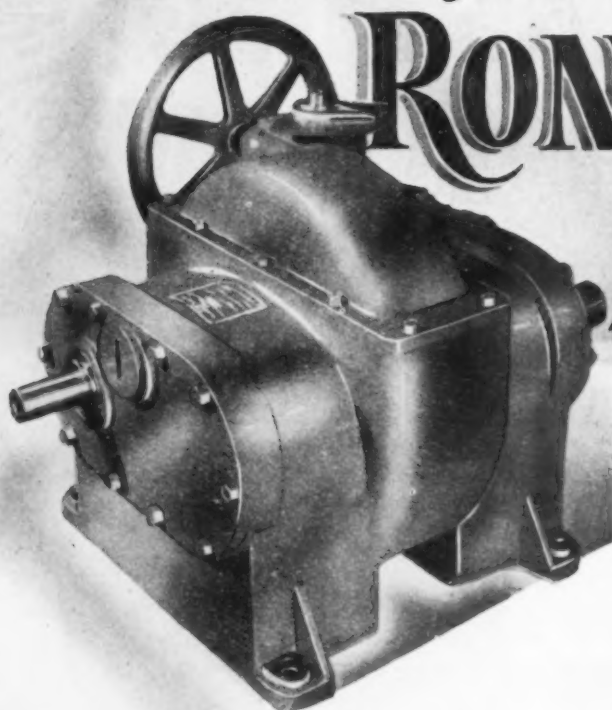
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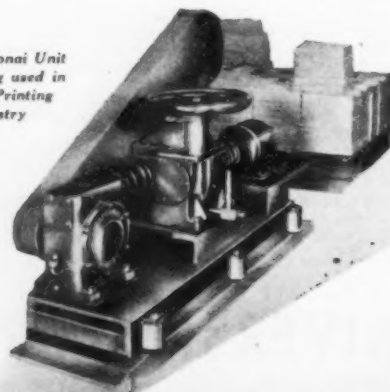
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■ Australia's National Manufacturers' Newspaper circulating in all States, New Zealand and Overseas. A weekly newspaper devoted to industrial efficiency and the manufacturing progress of Australia. Subscriptions within Australia and New Zealand (including Annual Number), £1/15/-; Great Britain and British Commonwealth Nations, £2/10/-; Foreign, £3. All subscriptions payable in advance. Microfilm subscription by arrangement.

PAGE NINETEEN

DECEMBER 16, 1950.



Essential Steps to Economic Stability

"I am convinced that the objective of strengthening Australia, while maintaining our standards of living and fighting down the inflationary drift, will never be reached if, as the means for doing so, the nation places its faith in controls. Such a negative and sterile approach would be unworthy of Australians and could only have the most deleterious effect upon the efficiency of our economy as a whole. For experience has shown that controls and the vast organisation of bureaucratic machinery which, of necessity, goes with them, clog and clutter up a nation's productive effort."—Mr. H. G. Giddy, Chairman of Directors, at the recent annual meeting of the National Bank of Australasia Ltd.

THOSE words have special significance at the present juncture. For there are dangerous indications that Australia may yet again be shackled with a series of controls whose only ultimate effect undoubtedly must be a slowing-down of production, stifling, as they do, individual initiative and at the same time creating the temporary illusion that their advent spells the lifting from the individual of the responsibility to make a major contribution to the successful functioning of the economy. "To no small extent," Mr. Giddy continued, "the prolongation of various controls into the post-war years has been responsible for twisting much national effort into soft production, to the severe detriment of the basic industries."

The time has arrived, therefore, for both a private and a public reckoning. It has become, in short, the bounden duty of the individual, of the manufacturing fraternity, and of the statesmen to study carefully every aspect of the inflationary issue and, such study completed, to take

individual and national steps for its present halting and for its ultimate eradication. "Restraint now," Mr. Giddy urges, "management of one's affairs with an eye to the future; avoidance of the excessive spending which, naturally enough perhaps, tends to accompany any new-found prosperity, are practical means of fighting the inflationary drift and are available to every person, company, or public authority. No great end was ever achieved without some sacrifices. There is no magic wand which Governments, private enterprise or trade unionism might wave and thereby add strength to the economy or suddenly eliminate the inflationary drift. Courageous leadership, self-discipline and personal exertions alone will enable attainment of these goals."

Australia must fight her way out the hard way. Hard thinking. Hard planning. Hard work. These are the tools wherewith she must force an exit from the inflationary rapids into the safer waters of stability and sound economy.

Meeting of Industry's Parliament

Melbourne was the venue of this year's Conference of the Associated Chambers of Manufactures of Australia. To this city on December 6th journeyed industrial leaders from each of the States, where they engaged in free and full discussion of the many vital issues with which they are to-day being called upon to grapple. In view of the serious situation confronting them, it was well that the gathering should have been thoroughly representative of the whole industrial world. For in the chaos and clamour of to-day, industry's voice will be heard, and heeded, only if it is raised in the name of National Unity and of National Service.

THE Conference was under the chairmanship of Mr. C. N. McKay, whose Presidential Address constituted a particularly able analysis of Australian matters industrial.

One of the major points which the President dealt with was the urgent need for improved employer-employee relationships, on which relationships ultimately are dependent increased productivity, with its

corollary of high wages and high living standards. He laid particular emphasis on the menace of the ever-recurring strikes. "Strikes," he declared, "are outmoded as industrial weapons. For they delay production, sow dissension, and damage the national economy. They keep rank-and-file unionists financially insecure and check any real rise in the standard of living." None can dispute the truth of those contentions.

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Indeed, virtually every day of the industrial year serves to confirm their accuracy.

Mr. McKay went on to express the opinion that one way out of the present impasse may be an alteration in the system of Arbitration, coupled with a more reasonable approach to industrial issues on the part of the Trade-Union movement. "Changes," he said, "are needed in the Arbitration Act, but the most conspicuous defect is not in arbitration machinery, but in the spirit in which some unions approach the Court and the Conciliation Commissioners." Is it too much to hope that the Australian Trade-Union movement will, at no distant date, be permeated with the spirit of employer-employee co-operation, plus a determination to increase man-hour productivity, which to-day characterises unionism in the United Kingdom and in the United States? This new approach to these two vital questions could have in Australia the same splendid results as are being obtained in the great industrial nations overseas.

Inevitably, the President was forced to touch on the continued shortage of coal, which shortage is being reflected, first, in the production of steel, and finally, in the production of every article, turned out in the factories and engineering plants of this nation.

Mr. McKay discussed also the effect on the national economy of the

increase of £1 per week in the basic wage, adding that "It could well turn out to be a very deadly cure for an economic complaint."

Finally, he touched on the issue of gravest moment to Australian manufacturers—the Protectionist issue. "The policy of Protection," he warned his fellow-industrialists, "has been placed on the chopping block. International conferences are hacking it into a policy of international free trade." That is a stern warning, a warning which has been reiterated in "The Manufacturer". It is a danger against which such precautionary steps must be taken as will reduce to the lowest possible level the threat to future manufacturing expansion inherent in the tariff-reducing decisions which, with unfailing regularity, have emanated from conferences of signatories to the International Agreement on Trade and Tariffs.

The spirit which marked every phase of the Conference's deliberations made it clear that Australian manufacturers appreciate to the full the stern responsibility which rests upon their shoulders—the responsibility of conducting the nation's manufacturing industries with maximum efficiency in order that they may contribute to the national good by providing remunerative and diversified avenues of employment for Australian men and women.

Pithy Jottings of Industry and Industrialists

NEW-PRESIDENT— ASSOCIATED CHAMBERS OF MANUFACTURES.

Mr. R. J. Webster, Managing Director of Bradford Cotton Mills Ltd., was last week elected President of the Associated Chambers of Manufactures of Australia, in succession to Mr. C. N. McKay.

"MANUFACTURER'S" NEW SUBSCRIPTION RATES.

As from the 1st of January, 1951, the subscription rates of this journal will be increased from 30/- to 35/- per annum (52 issues and Annual); British Commonwealth Nations, from £2 to £2/10/-; and foreign from £2/10/- to £3. This action has been forced on "The Manufacturer" organisation by reason of heavily increased costs of production, arising from soaring prices of newsprint, blocks, postage, and wages. The increase, as a matter of fact, will barely cover the additional postal charges involved in the despatch of the weekly journal and the Annual.

"The Manufacturer" remains, nevertheless, an outstanding investment for industrialists in that it keeps them abreast of manu-

facturing developments at home and abroad; records the newest processes and the latest equipment coming on to the market; gives full particulars of current tenders; and makes available the invaluable services of the Inquiry Page.

DEATH OF PACKAGING IDENTITY.

Mr. Grosvenor Short passed away suddenly on Monday, 11th December. Mr. Short was the Victorian branch manager of Weston's Pty. Ltd. He had been in this capacity since January, 1930. Mr. Short had, during his long association with Weston's, acquired a vast and valuable fount of know how on all things pertaining to the packing, packaging and goods handling which many of his business friends in Victoria recognised and never hesitated to avail themselves of his help and advice.

NEW FACTORY FOR C. C. ENGINEERING INDUSTRIES.

C. C. Engineering Industries Ltd., of Glebe, N.S.W., has bought 111 acres at Granville South and will build a factory there at an early date.

PAPER INDUSTRIES CO. MAN GOES ABROAD.

Mr. O. A. Klemich, managing director of National Paper Industries Ltd., Southwark, S.A., has left Adelaide on a six months' overseas visit. He will visit England, France, Germany and Scandinavian countries to buy new machinery and supplies for expansion of the company's business.

MARKET SURVEY FOR PULVER- ISING EQUIPMENT.

Mr. James Hope, Sales Director of British Jeffrey-Diamond Ltd., returned to England by plane on December 7, at the conclusion of a five-week market survey throughout Australia.

Mr. Hope said, before he left, that he is convinced there is a big market in Australia for the crushers, pulverisers, and allied equipment for which his firm is world famous. During his stay he visited many industrial undertakings, including principal coal-fields in N.S.W., Victoria, Queensland, and Western Australia.

Mr. Hope came to Australia at the suggestion of Mr. F. H.

Fearon, principal of F. H. Fearon and Sons Pty. Ltd., 79 Pitt Street, Sydney, who have been the Australian representatives of British Jeffrey-Diamond for nearly thirty years. Mr. Fearon visited England and the continent last year.

Although widely used in coal mining and quarrying, crushing and pulverising equipment has not been fully applied to the needs of some other industries, according to Mr. Hope, who sees great opportunity in this field. Of particular value to manufacturers should be the firm's laboratory service equipped with pilot plant from which the size and capacity of plant required for any task is calculated.

This may vary from a 150 H.P. motor driving a plant turning out 60 tons of limestone an hour, to a tiny "Atomill" for fine grinding such as pigments, face powder, and icing sugar at the rate of 2,450 lbs. per hour.

The most recent product to be sent from Australia to the laboratory in England for testing was a sample of asbestos sheet. The Australian manufacturers hope to be able to reclaim rejects and damaged sheets for crushing and re-manufacture. The report

From the laboratory will show the capacity of plant required for the job. Many commodities do not vary from place to place, and already tested data is readily available from the Australian agents, who would welcome enquiries. They would also be glad to arrange for the testing of any new material.

NEW NAME FOR MAGNUS INDUSTRIAL EQUIPMENT PTY. LTD.

With the floating of Magnus Industrial Equipment Pty. Ltd. to a Public Company, the opportunity has been taken to change the Company's name to Mechanical Handling Ltd. It is considered that, with this new title, clients will be better able to associate the name of the Company with the type of business that Magnus has been conducting for over 17 years.

Mechanical Handling Ltd. will continue to manufacture all Magnus equipment and to distribute it under that brand name. They will also continue to represent and distribute the other Australian and overseas products that have been distributed in Australia by Magnus Industrial Equipment.

ENGLISH COY. HAS NEW S.A. INTEREST.

An offshoot of Schweppes Ltd., the large English aerated water company, has been registered in Adelaide.

It is believed that negotiations are in progress which may result in the company taking over the aerated water business of Tawspa Beverage Co., Ltd., Payneham.

The Tawspa Beverage Co. has now changed its name to St. Bernards Ltd.

HYSTER MATERIALS HANDLING EQUIPMENT.

Mr. C. E. Jones, M.I.P.E., Director and Manager of the Hyster division of Sonnerdale Ltd., Sydney, has recently returned to Australia after spending four months at the Hyster Company's factories at Portland, Peoria, and Danville, U.S.A. Whilst in America, Mr. Jones made a study of the latest production methods in the manufacture of materials handling equipment, including fork-lift trucks and Karry Kranes. Mr. Jones also included England in his overseas itinerary.

INDUSTRY'S CONTRIBUTION TO U.K.'S AND U.S.' NATIONAL INCOME.

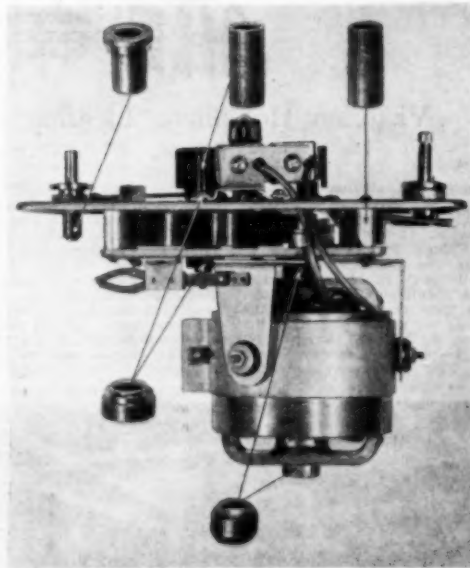
Statistics compiled by the United Nations reveal the interesting fact that for the year 1948-49, manufacturing industry in the United States contributed 36 per cent. of the national income of 216,800 million dollars (£A97,560 million). In the United Kingdom, manufactures comprised 52 per cent of the national income of fsg.11,201 million (£A14,001 million). In America, agriculture comprised 8 per cent. of the national income, and in Britain 5 per cent.



Microid Self Lube Bearings provide smooth quiet running for "Magictape" Recorder

The Magictape recorder made by Pyrox Ltd., of Melbourne, is the result of six years' engineering research and development in the field of magnetic recording. Microid Self Lube bearings have contributed in no small way to the outstanding, unfailing performance of this recorder.

Seven Microid Self Lube bearings are employed in the Magictape recorder—two identical main motor bearings, two fly-wheel bearings, one take-up shaft bearing, one pressure roller bearing and one re-wind jockey pulley bearing.



Microid Self Lube bearings are strong and ductile. They keep shafts rotating free and true with a minimum of noise and wear. Because they are porous, they retain lubrication and release it to shafts as required. By fitting such equipment with Microid Self Lube the risk of failure is very considerably reduced, even if attention is neglected.

The many sizes carried in stock will generally permit engineers to adapt their requirements to these sizes, thus effecting savings in delivery time and eliminating the cost of new tools.

We may be able to show you where Microid Self Lube bearings will improve your products and reduce costs. Send us blueprints for specific recommendations.

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363 Murray Street, Perth

Viewing Industrial Developments Around & About the FACTORY

Our editorial representative in each State makes regular calls on manufacturers, but if YOU wish to see some particular phase of your business given publicity, communicate immediately with the Editor, and he will arrange for a representative to call.

A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

Victorian Holophane Lighting Installation

A lighting installation of unusual interest has recently been completed in two newly erected dye houses at Lincoln Mills (Aust.) Ltd., Coburg, Victoria.

From the photograph on the left, it will be observed that seeing conditions in the old dye house were extremely poor, thus deciding the management that the lighting in the new section must be in keeping with modern standards. This photograph, however,

particularly suited to arduous situations of this nature, because they are vapour proof and dust proof. The conical hood embodies silicon aluminium castings and has a smooth surface for easy cleaning. The hood has a scientifically designed internal reflector, and a smooth surface external refractor. The combination of this reflector-refractor gives the unit the "punch" necessary to penetrate the steamy atmosphere.

used for the drops.

The Holophane lighting fittings

were supplied by Australian General Electric Pty. Ltd., Melbourne.

Angle Steel with a Thousand Uses

Based on the principle of standard constructional units, such as the well-known "Meccano" sets, the Dexton Angle Unit has come into the industrial and commercial field with a multitude of uses.

It consists simply of lengths of special slotted and patented angle

obviates delay in urgent work caused by shortages of materials, such as timber, for the rapid construction of racks, benches and shelves or for the carrying out of alterations. There is ground to support the contention that there is no waste in its use. It saves space



Victorian Holophane Lighting Installation, referred to in the accompanying article

does not portray the actual conditions, for the photographer supplemented the lighting with a 1,000 w. floodlight, which accounts for the bright illumination on all vertical surfaces. The photograph of the new installation was obtained with a three-minute exposure without any retouching.

The problem was to obtain a lighting fitting that would penetrate the steamy atmosphere and at the same time stand up to the effects of corrosion brought about by the sulphurous acid fumes.

It was decided to install Holophane F.9812 Units, which are par-

As will be seen from the photograph taken after the new light fittings were installed, the working conditions are free from shadows, and the general appearance is one of cleanliness and pleasant surroundings.

The units, of which the final installation will comprise 349, are mounted on 12 ft. x 12 ft. centres, and are suspended 11 ft. from the floor on specially galvanised chain, the suspension hooks being of cast brass and sealed with compound. The wiring has been carried out with copper-covered cable for the main runs; the P.V.C. has been

steel, which, bolted together in an equally simple process, builds almost any conceivable thing. It is an adaptable and economical material for building all kinds of structures and its range is said to be undefined. It has been used as a framework for small buildings, fencing, machine guards, storage racks, work benches, stands for small machines, repair stagings, jigs, trolleys, bins and shelves. Its possible application seems unlimited.

There are ample grounds to support the maker's claims that it

and time. The angle steel can easily be adjusted for shelves or racks in odd corners of a factory, over work benches or machines, and so saves floor space. Dexton Angle is useful for mounting electric switchgear, control gear or cables and for the construction of instrument panels. In most instances, any structural work made from the angle steel has the advantage of being instantly enlarged or altered by a simple process of adjusting a few bolts. It looks attractive and adds to the business-like appearance of the workshop or factory. It has the additional

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SPECIAL DIAMOND TOOLS MADE TO YOUR REQUIREMENTS

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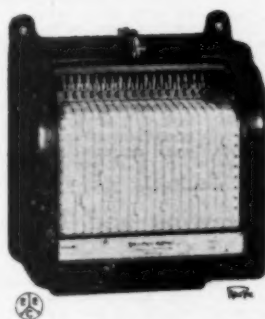
14-16 Parramatta Road, STANMORE, N.S.W. Phone: LA 3842.

DIAMOND & BOART PRODUCTS (VICTORIA) PTY. LTD.

405 Collins Street, MELBOURNE, VICTORIA. Phone: MU 3956.

Agents—S.A.: Gilbert Lodge & Co. Ltd., cnr. Morphett and Franklin Streets, ADELAIDE.
W.A.: Western Machinery Co. Pty. Ltd., 494 Murray Street, PERTH. Phone: BA 2495.

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With the Everett Edgecumbe "Inkwell" operation recorder you can:

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- Simplify supervision.
- Achieve constant supervision, with the recorder at the machine or even in the manager's office.
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It is of steel, .080 inches thick, waterproofed and is stove enamelled a battleship grey. It is supplied in 10 ft. lengths and weighs about 1 lb. per foot. It is

also in light alloy, 104 inches thick in natural finish and is non-corroding. This weighs less than 1 lb. to the foot.

The Australian agents are McCarron, Bird & Coy of 479 Collins Street, Melbourne.

Versatile Jobbing Firm

Holder Stroud Installing Big New Presses

There can be few firms in Australia whose products cover so varied a range as Holder Stroud, Pty. Ltd. of Bourke Road and Bowden Street, Alexandria, Sydney.

A jobbing firm, their versatile plant does all sorts of work for other factories. Almost all their work is turning out parts of products which are finished in other factories. "In fact, even we do not know what some of the articles we turn out are for", says Mr. John Stroud.

They are metal spinners, metal stampers, electroplaters, sheet metal workers and aluminium cold impacters. They are also tool and die makers, nickel platers, silver platers, copper platers, and brass finishers. A "Manufacturer" reporter, on a visit to their factory, found them making ball floats, shower heads, cold impacted radio valve cans and radio coil cans, flood lights, hospital equipment, light fittings and a host of other things.

"A large part of our work is the testing of other firms' ideas", Mr. Stroud explained. "The cost of building a special plant would be prohibitive for them, so they give us a design of what they want. We produce it, and the firms can decide whether they think the idea—now in practical form—is worth going into full-scale production with. We also do small productive work for small firms which themselves have not a big enough productive capacity. They might order 100 or 200 items to keep their production running. These might be only small items in a big job, but they are essential to get results from their machinery." Holder Stroud are, in fact, men-of-all-work for many trades.

That the nature of their work is

appreciated by other industrialists is shown by the increasing demand and the heavy pressure of orders.

Holder Stroud, within the next few weeks, are to instal bigger presses to enable them to handle larger types of work.

The firm is one of the few in Australia which use the impact-extrusion method. This machine, which has an automatic feed, has a punch which hits the slug or rondel with a pressure of up to 500 tons per square inch, squeezing and drawing back the metal into the required shape—squares or rounds.

In other departments are the single-action and double-action presses, metal spinning, sheet metal working—which includes electro-welding, shot welding and oxy-welding—and the electro-plating processes—which consist of chrome, nickel, copper, tin, silver, gold and polishing and finishing of the article. Condenser cans, coil cans and valve shields, at present a large part of the firm's output, are all in aluminium. The firm at present is making parts of electric kettles, steel cabinets for electric gear, expansion joints for ships, shields for fluorescent lighting, parts of jacks, copper washing-machine parts, mufflers for small generators, sprays for agricultural use, cock cases, speaker flares, 6-in. showers and air vents for ships.

One of the few jobs which they do from start to finish is bodies for bus head-lamps.

Holder Stroud have their own department for making the small tools needed in their versatile workshops.

There is much that is inspiring in a visit to their factory, for the whole atmosphere is one of enterprise, adaptability and vigour.

Portable Pipe Screwing and Motorised Hack-Saw

The Granowski portable pipe screwing machine possesses attributes that commend it strongly as an efficient unit, and would prove an investment for the manufacturer who has to do threading, reaming, cutting off and screwing up fittings on the job. As every industrialist knows, time and labour saved on any fair-sized job adds considerably to profits.

The pipe screwing machine is designed to cut off any pipe from a quarter of an inch to two inches. All castings, with the exception of the chucks, and worm gearing,

are of high-grade aluminium, tending and designed to keep the weight of the unit down to 180 pounds. This weight allows it to be easily carried by two men about the job in hand. The scroll chucks, main sleeve and die bars are of cast steel. The worm wheel is of phosphor bronze and there is a hardened steel worm. The cutting speeds are for 1 inch to 1 inch, 21 revolutions a minute, and for the 1 inch to 2 inches, 11 revolutions a minute. It is fitted with a two-speed vee belt from the motor to the worm reduction gear. It can



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be supplied with motors for any voltage. It has the advantage of operating by the simple process of plugging into a power point. When supplied with a special universal drive shaft, it will operate any geared receding die stock up to four inches capacity.

It is manufactured by O. Granowski, of 549-551 Church Street, Richmond, Victoria.

The same firm also produces the Granowski high-speed motorised hack-saw.

This is an improved model on the older types and is equipped with two adjustable work stops, a push-button starter and automatic cut-out. It has suds pump and fittings and adjustable weight that can be speedily moved for cutting large or small sections. It has an hydraulic lift return stroke and renewable guide shafts and phosphor bronze bearings. It has patent 45 degrees vices and a pressure release mechanism over the last 1/16 inch of the cut. High-speed saw blades are recommended.

This Glass is Tough

"Armourplate" Processed
in Australia

Which is the less dangerous—ordinary glass which breaks into a thousand jagged, dagger-like pieces—or special glass which has high resistance to impact and which, when broken, disintegrates into small fragments with harmless edges? The answer is obvious.

Pilkington Brothers (Australia) Limited, a subsidiary of Pilkington Brothers Limited, of St. Helens, Lancashire, England, process "Armourplate", a special heat treated safety glass, at Kilkenny, South Australia, and Geelong, Victoria.

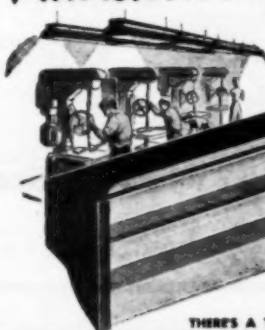
This safety glass has an immense value for car-drivers and truckers, lessening dangers of cuts in road accidents, and it has a wide variety of other uses. It is to be found in ship's portholes, on railway engine windows, gas and electric cooker doors, canteen hot cupboard tops, mental hospital windows and equipment, staircase balustrades, post office and bank counter screens, and in cinema projecting boxes.


The glass also has many uses in industry. It is ideal for glue manufacturers' tables, for drying tables in chemical plants, for windows in operator's cabins, for cogging mills in steel works, for protecting gauges, for windows in fume cupboards and lift gates and for flame-proof electric light fittings in floodlight, bulkhead and garage pit lights.

Pilkington Brothers Limited also specialise in the manufacture of "Armourplate" glass doors. These doors are processed from half-inch thick polished plate glass, and the finished "Armourplate" door can be supplied in either of two standard widths, 30 ins. and 36 ins.

Among the firm's other products are "Insulight" double glazing units. These are hermetically sealed. (Turn to page 26.)


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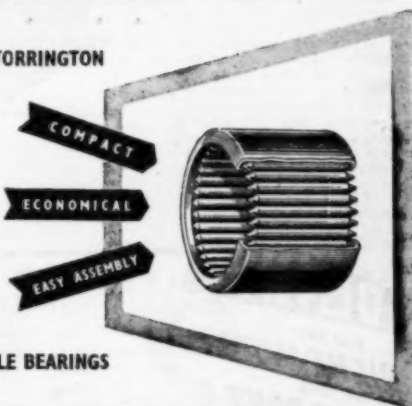
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New High-Speed Sectional Warping Machine

Specially designed for the warping of sectional beams used in warp knitting looms, and for the production of beams and spools for smallwares weaving, a new high-speed sectional warping machine recently introduced, has many features which will appeal to manufacturers of fabrics of the type referred to above.

Designed and constructed on precision engineering principles, the new machine has a neat and compact appearance in keeping with modern trends of design. It occupies a floor space of only 3 ft. square or 6 ft. by 3 ft. when fitted with an inspection table. All the working parts are enclosed and protected from dust and fluff, whilst all the controls are conveniently placed and easily accessible to the operator. Fast revolving shafts are mounted on ball bearings to ensure smooth running and the drive which incorporates a 1 h.p. motor is housed within the machine casing.

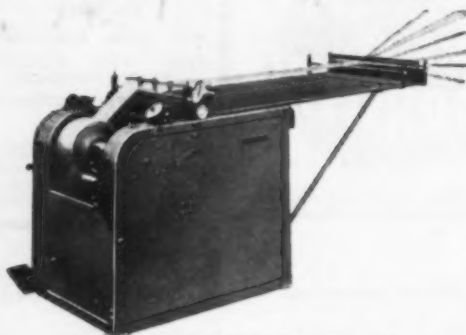
The machine has a warping speed range of 110 yards to 440 yards per minute, and is so designed that it can be run at any speed within these limits. It is capable of warping 800 to 800 ends a time from single and mag-

zine type creels. Beams, 21 in. between flanges, and with flanges up to 14 in. diameter can be accommodated. Shorter beams can,

In warping, the threads from the creel pass between separated and non-rotating guide rollers and then through a spacing comb, one end per dent, to form a warp sheet of the required width. The ends are then guided over a roller and across the inspection table, which is of a dark colour

wheel at the side of the machine, can be expanded or contracted on the lazy-tongs principle to suit the width of warp at the beam. The reed also guides the threads to the tension roller and on to the beam. The warping speed is regulated by means of a handwheel at the front of the machine which serves to vary the effective diameter of the driving pulley which is built up from two cone-faced discs of the expanding type. The speed can, of course, be varied whilst the machine is running and, to enable accurate regulation to be made, a built-in tachometer calibrated in yards per minute is positioned just above the handwheel.

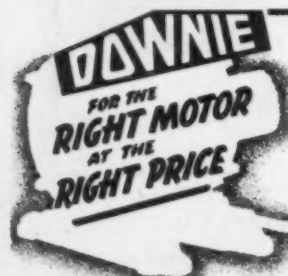
In order to secure a constant yarn speed throughout the build-up of the beam, the drive to the beam shaft is controlled by a felt-covered pressure-roller or drum positioned below and in contact with the surface of the beam. As the beam builds up, the pressure-roller is moved outwards and, by acting on the expanding pulley unit, progressively reduces the rotational speed of the beam and keeps the warping speed constant. The beam pressure-roller is mounted on ball bearings and a pair of hand-operated levers enables the operator to set the roller to suit the diameter of the particular beam barrel employed. The roller also exerts the required pressure along the full length of



The new high-speed sectional warping machine.

of course, be employed and, if desired, two or three short beams can be warped simultaneously by mounting them side-by-side on a common shaft.

to facilitate the detection of yarn faults, etc., during the actual processing operation. The warp ends then pass through the dents of an adjustable "zig-zag" reed which, by means of a small hand-



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the beam and ensures that each and every beam is evenly warped to the required uniform density. When changing over to longer or shorter beams, the pressure-roller can be removed and replaced by another of appropriate length, in a matter of seconds.

The machine is equipped with a yardage counter driven from the beam pressure-roller, whilst an electrical revolution counter is coupled to the beam shaft. To ensure that all beams in a series shall contain exactly the same length of yarn, the first is warped with the aid of the yardage counter, the reading on the electrical revolution counter being noted at completion of the beam. This counter is then preset and for all subsequent beams in the series, the machine stops automatically as each beam has completed the required number of revolutions.

A warp beam release arrangement is operated from a hand-wheel, conveniently situated at the front of the machine. This enables easy adjustment and quick changing from one beam to the next. A beam locking device is also fitted and this prevents the possibility of beam slippage as well as facilitating beam setting and loading. A foot-pedal situated low down at the front centre of the machine takes the pressure-roller away from the beam when depressed. This action, besides taking all pressure from the warp beam, allows free access to the beam for end-piercing, etc., and is of great assistance at the beginning of a new beam and at the change-over from one beam to another.

The new machine can be stopped instantaneously (a) by the operator pressing the finger-tip control button, (b) automatically after the completion of a full beam, by pre-setting the electrical revolution counter, and (c) automatically on thread breakage by the action of the electrical stop motion fitted to the warping creel. These stopping arrangements all operate in conjunction with a cone clutch and a powerful hand brake which acts on the beam shaft. The brake can also be operated by a hand-lever which incorporates a quick-release arrangement. The hand brake and release arrangement can be seen at the front left centre of the machine in the illustration. Directly below is a foot-operated clutch starter which gives the operator perfect control over the

running of the machine and ensures the slow start necessary if undue strains are not to be imposed on the threads. A second foot-clutch is situated at the back of the machine and directly opposite the front starter; this two-clutch arrangement should be of great assistance to the operator as

well as giving easier and more efficient control over the running of the machine.

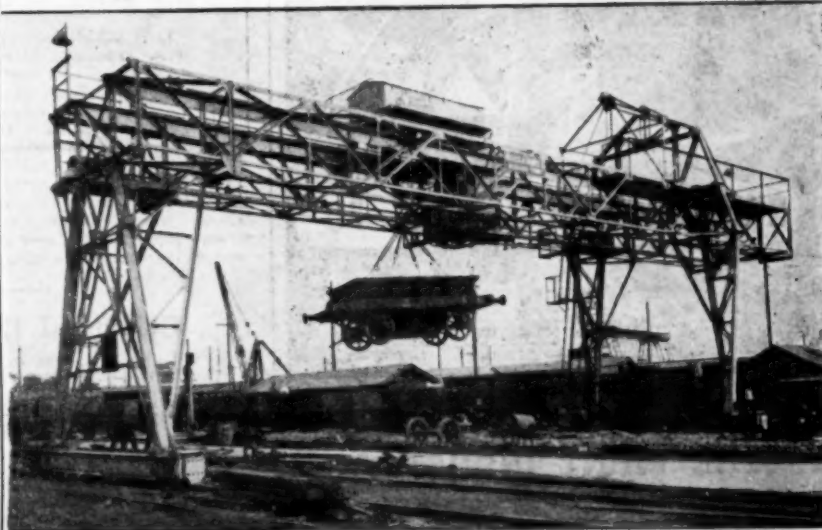
The creel can be supplied in different sizes to hold any number of supply packages within the economic warping range of 200 to 800 ends. It is built in two sections, each holding half the total

number of cone holders. Inside loading is provided for and the threads run along the outside of the creel. The sections are mounted on runner wheels and this allows the formation of a central gangway for loading purposes, thus reducing the normal creeling time.



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In the upper illustration is shown a Crane of 8 tons capacity with 107 ft. bridge, built for a large engineering works in New South Wales.

The lower illustration shows one of a number of Gantry Cranes supplied to the Victorian Railways for handling goods on sidings. It has a capacity of 15 tons; the 55 ft. bridge spans two railway tracks and a roadway.

GE45

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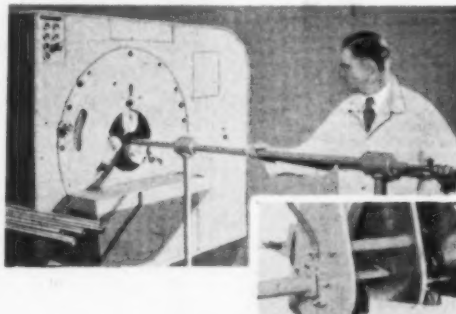
The yarn is unwound over-end from stationary cones and passes through disc tensioners, then through porcelain guide eyes and through the eyes of the electric

stop-motion droppers before passing to the first guide rollers and the comb on the warping machine. The position of an end break is indicated by a colour light signal. [2664].

Cylindrical Die Thread Roller

The two photographs illustrate a cylindrical die thread roller using a through-feeding process

are available, both in standard and special designs. Controls can be supplied to permit the thread-



Long bars are fed into the front of the machine, thread-rolled and automatically discharged from the rear. Inset shows that short headless parts are loaded in a chute for rolling.

which may be used on solid bars or tubing of such materials as soft or heat-treated steels, brass and copper. Various thread forms may be rolled, including the Acme thread.

Long bars can be threaded over all or part of their length. Short, headless parts can be fed through the dies continuously by manual or semi-automatic devices, as illustrated, right. The long pieces can be cut into short finished parts after threading. Three cam-actuated cylindrical dies are provided in the machine. Feed is obtained from the contact of the dies with the blank. Finished work is discharged from the rear of the machine.

Vertical and horizontal cylindrical die thread rolling machines

ing of complete lengths, ends or the centre of a part. [2660].

Machine for Flame Hardening Gears

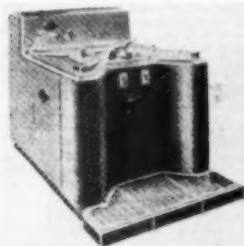
A new machine for flame hardening gears and other revolving parts has been produced overseas. The surface hardening of the gear teeth is effected by localized heating in an oxy-acetylene flame followed by a water quench.

The machine consists essentially of a quenching tank with the gas heating units mounted on the cover. The tank is built up from steel plate welded to a

rigid frame. Work is placed on to a vertical spindle located in the centre of the gas jets. This spindle can slide vertically to carry the heated work down into the quench and return it to the loading position, and is rotated during both the heating and quenching periods. Vertical movement of the spindle is effected by an hydraulic mechanism, supplied by a pump driven from the main motor.

The gas jets can be grouped as desired and regulated independently. They are readily accessible as they are placed on top of the machine table as shown. Temperature is controlled by automatic regulation of the gas flow to the jets and by the heating time. Two pressure gauges are mounted on the panel at the rear of the machine, together with a flowmeter and three pilot lights. Push-button controls are on a separate panel at the front. An "emergency stop" push-button is provided. Forced draught ventilation is supplied to prevent accumulation of explosive gases.

Automatic cycle is controlled by a process timing mechanism. Ma-



Gears and similar revolving parts are flame hardened in this machine by being placed on a vertical spindle situated in the centre of gas jets.

chine is adjusted to suit the dimensions of the part to be hardened, which is held in place by an automatic clamping device. On pressing the starter button, the work is lowered into the plane of the jets which are located close to the outer surface. From one to four jets may be used, depending on the component. Duration of heating may be varied between 5 and 120 secs. and speed of workspindle rotation from 60 to 120 r.p.m.

On completion of the heating period, the still rotating spindle is lowered automatically into the quench, where it remains for a predetermined time and is then returned to the unloading position.

Weight of machine is approximately 2,600 lb. and the quenching tank has a capacity of about 25 gallons. [2656].

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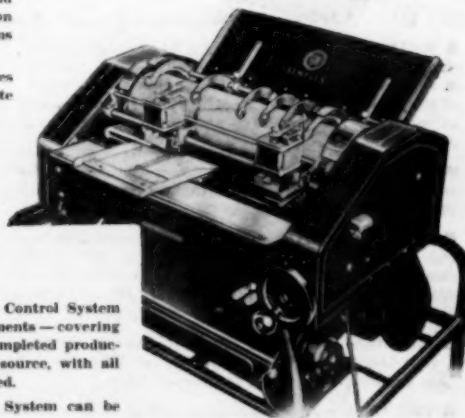
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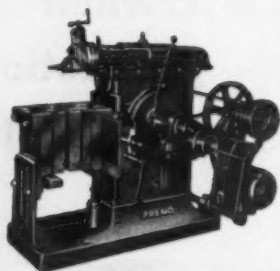
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Portable Radio Amplifier for Factory

There has recently been introduced a portable radio amplifier, for use in small factories or other organizations where it is required

9 in. by 9 in., as shown in the illustration. It is operated from 200/250 volt., 50/60 cycles, A.C. mains, the power consumption being approximately 120 watts. Output is 20 watts, at 15 or 500 ohm impedance.

The superhet radio unit incorporates a four-position switch for reception of three pre-set frequencies in medium-wave band and one in the long wave band.

A gramophone input is provided for a high impedance armature or crystal pick-up and a microphone input for a 15 ohm moving coil or ribbon microphone, a Mu-metal screened input transformer being incorporated. The radio or gramophone is automatically cut out when the microphone is switched on, but the equipment can be supplied to give mixing facilities for all inputs.

Loudspeaker units of several types are available and a small loudspeaker with independent volume control is built-in for monitoring purposes. A buzzer signal is incorporated. [2854].



Portable radio amplifier for small factories, etc., operates on 200-250v. 50-60 cycles, A.C. mains, for relaying radio programmes, time signals, etc. It is a self-contained unit, 18 in. by 9 in. by 9 in.

to relay radio programmes, staff location, time signals and so on.

The self-contained unit is housed in a steel cabinet, 18 in. by

Centrifugal Cleaning of Wash Oils

Centrifugation can improve engineering workshop efficiency. It is a common practice to clean machine parts with a paraffin wash oil. The equipment improvised for the purpose is often far from ideal; cleansing the dirt-laden oil, when attempted at all, is limited to the use of a basket type strainer, which removes only coarse solids. As a result, either dirty oil is re-used for cleaning, or much waste has to be disposed of. Further, the operation is very messy.

A hygienic washing system, using constantly clean oil, has been developed. It employs a centrifugal clarifier to free the oil from water and contaminants, as part of a system specially designed for this purpose.

The following general characteristics, common to all models, are modified to suit particular

needs. An enclosed perforated plate serves as a stand for the objects to be cleaned. Washing is carried out by a stream of paraffin ejected from a pistol type spray with a trigger operated valve. The oil drains through the plate into a hopper, and then passes through a strainer into the left-hand compartment of the paraffin supply tank. Some settling occurs here, and the oil is next pumped for treatment to the centrifugal clarifier. It is returned, perfectly clean, to the right-hand tank compartment, and thence pumped to the spray.

Special models are made for light, slightly dirty components, for heavy, dirt laden parts, and also for centralised operation. In many instances, it is claimed, existing installations can be economically modified to benefit from the system's advantages. [2808].



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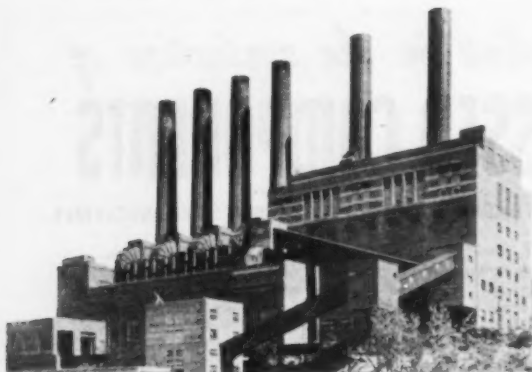
750 TON "CLEARING" PRESS

Some idea of the dimensions of the "Clearing" 750 Ton Press can be gained by comparing it in size with the operator, and the 75 Ton Single Action Press illustrated below.

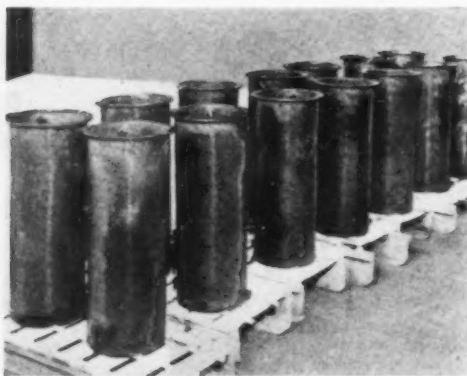
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Porcelain enamel was used for five galleries and junction house of coal conveyor system in this modern power plant.



Used in the manufacture of synthetic rubber, these porcelain enamel coated latex strainers resist attack by the materials handled.

Porcelain Enamel Finishes

Their Value as Corrosion-Resistant Coatings for Metals

It is doubtful whether anyone has not at one time or another seen and used porcelain enamel finishes for cast iron or steel. Because of its beauty and durability, as well as resistance to corrosion, porcelain or vitreous enamel has been for many years a standard finish on bathtubs, stoves, interiors of refrigerators, washing machines, pots and pans, signs, and many other items where lasting beauty and freedom from corrosion are desired. It is distinguished from organic or paint-type finishes in that it is entirely inorganic in composition and is actually a glass fused (melted) on to the metal base. Its coefficient of expansion is adjusted to match reasonably closely that of the metal base.

SUCH terms as "glass-lined" when applied to chemical ware, hot water, beer and milk tanks, refer in most instances to Porcelain enamel fused to mild steel.

Briefly, the enamelling process consists of smelting or reacting at considerably elevated temperatures (2200°-2500° F.) intimately pulverized and mixed materials such as silica, feldspar, borax, metal fluorides, titanium dioxide, or zircon silicate. The resultant molten mass, when bubbling has ceased, is usually discharged from the continuous or batch-type smelter into a tank of water. This sudden chilling of the molten glass produces friable particles known as "frit" and the operation is the "fritting" step. The frit is dried and shipped to the enamelling shop in 100-pound paper bags.

Here, the frit is charged into a porcelain-lined ball mill with water and plastic clay and reduced to a fine-particle size. These particles float in the water from the colloidal action of the clay. The colloidal properties are adjusted by

the addition of small quantities of electrolytes such as magnesium carbonate, borax, potassium nitrite, epsom salts, or hypo. Small quantities of very plastic clays such as bentonite or montmorillonite are also often used.

The suspension of the finely divided frit can be applied to the

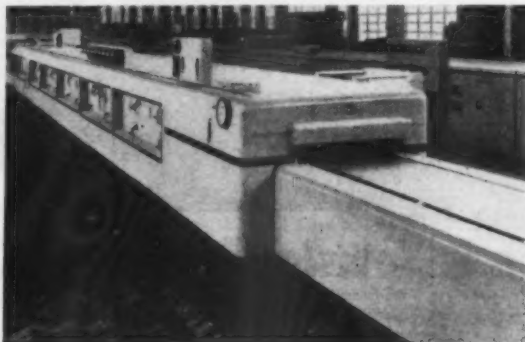
clean metal base by dipping or spraying. The metal can be cleaned chemically or by blasting. Sheet metal is usually chemically cleaned while castings are usually blasted. No foreign matter should be present on the metal surface before application of the enamel slip.

After applying the wet enamel in

a thin uniform layer, the water is driven off slowly to prevent cracking or flaking of the bisque or unfired coating. The article with the coating cemented by the clay is placed on a conveyor and is brought to a temperature at which the glass particles fuse to a homogeneous mass and bond to the metallic oxide layer formed under the oxidizing conditions. Upon cooling, the glass solidifies and remains bonded to the metal.

For dry-process application the steps are similar, but the grinding of the frit is carried out in a dry mill. Clay and electrolytes are not needed. The dry enamel powder is dusted on to a previously heated casting and the whole object reheated to fuse the coating uniformly over the surface.

In coating such large items as chemical reaction vats, beer tanks, and the like, the enamel is fused in exceedingly large furnaces, as the entire tank must be brought to a uniform temperature of about 1600°F. The coating is applied by the wet process (usually) through



An illustration of the cleanliness and durability of porcelain enamel may be seen in the porcelain enamelled baking oven.



Porcelain enamel conveyor buckets resist abrasive action and corrosion; are easy to clean.

special-type spray equipment working inside the previously cleaned tank.

SPECIFICATIONS.

The question might well be asked as to the type of Porcelain enamel for the best corrosion resistance. The answer would be that usually this is a compromise between several factors. The type of metal, article to be enamelled, and expected usage, have a great bearing on the type of enamel to be selected. For example, an enamel suitable for pressed steel sinks for

domestic use would be entirely unsuited to heavy steel chemical vats or as a coating for aluminium shapes. Dr. G. H. McIntyre, Vice-President and Director of Research for the Ferro Enamel Corporation, points out that there are no readily available specifications to govern the selection of any enamel for any designated purpose, but there are a wide variety of enamels from which to choose and usually one can be prepared by the supplier to meet most any given set of conditions if certain fundamental factors are considered.

The first of these fundamental factors is resistance to acids and alkalis. The enamels, basically, are compounds of metal-borosilicates, titanates, zirconates, or are a combination of these. Therefore, Porcelain enamels are not resistant to the action of hydrofluoric acid or strong alkalis. In fact, hydrofluoric acid, fused caustic, or boiling 8-15% caustic solutions are good agents for the chemical removal of the enamel coating.

However, certain types of Porcelain enamel can be made more resistant than others and standard tests are available for evaluation of acid resistance. Naturally, a greater degree of acid resistance is

required for chemical ware than for stove tops or enamelled pots and pans. Chemical ware is coated heavily with enamels on a heavy wall thickness metal object that remains in place and which is subjected to pressure and temperature changes as well as to highly acid conditions.

Porcelain enamelled chemical ware was highly successful in aiding the synthetic rubber programme. Chemical engineers of Goodyear Tyre and Rubber Company have given Porcelain enamel

Although the primary advantages of Porcelain enamel coatings are ease of cleaning and freedom from product contamination, corrosion resistance is highly important. In all instances, the linings have given satisfactory service for latex preparation at pH from 5-10, at temperatures up to 140°F.

Enamelled linings have also proved satisfactory for acid-coagulating liquors containing up to 2% sulphuric acid or hydrochloric acid with various concentrations of sodium chloride, various dilute

Table I (5)

Type of Enamel	Enamel	Sample	Weight Loss Grams - Sq. Ft.	Visual Appearance
Alkali Resistant Used as 2nd Coat	A	1	0.0007	Slight etch
	A	2	0.0012	Slight etch
		Avg.	0.001	
Alkali Resistant Used as Overspray	A	1	0.0016	Slight etch
	A	2	0.0020	Slight etch
		Avg.	0.002	
Alkali Resistant Used as 2nd Coat	B	1	0.0011	Very slight etch
	B	2	0.0016	Very slight etch
		Avg.	0.001	
Alkali Resistant Used as Overspray	B	1	0.0030	Very slight etch
	B	2	0.0034	Very slight etch
		Avg.	0.003	
Alkali Resistant Ground Coat	C	1	0.0025	Etched more than "A"
	C	2	0.0027	Etched more than "A"
		Avg.	0.003	
Commercial Black Edge Overspray	D	1	0.0057	Severe etch - Matte Finish
	D	2	0.0062	Severe etch - Matte Finish
		Avg.	0.006	
Commercial Ground Coat	E	1	0.0074	Etched - Matte Finish
	E	2	0.0077	Etched - Matte Finish
		Avg.	0.008	
Commercial Black Edge Overspray	F	1	0.0212	Very severe etch - Matte Finish
	F	2	0.0207	Very severe etch - Matte Finish
		Avg.	0.021	

Table II (5)

Type of Enamel	Enamel	Sample	Weight Loss Grams - Sq. Ft.	Visual Appearance
Alkali Resistant Used as 2nd Coat	A	1	0.008	Smooth etch
	A	2	0.011	Smooth etch
				Test area coated with granular deposit which was washed off leaving gloss only slightly affected.
Alkali Resistant Used as 2nd Coat	B	1	0.007	
	B	2	0.006	

Table III (5)

Enamel	Avg. Wgt. Loss of the Enamelled Surface in Grams - Sample (166 hours)	Total Extraction in Grams from 10 Grams of Frit in 50 cc Water
A - Blue; Non A. R.	0.0029	0.057
B - Opaque; A. R.	0.0061	0.311
C - Clear; A. R.	0.0045	0.113

Table IV (5)

Enamel	Weight Loss in Grams
E (new)	0.0342
A (Original Blue; Non A. R.)	0.0445



Porcelain enamel-lined malonic ester reduction stills used in the manufacture of pharmaceuticals.

coatings a rather wide and versatile usage in their chemical manufacturing and synthetic rubber processes. Porcelain enamelled reactors piping, valves and fittings are standard equipment for polymerization work in the manufacture of synthetic rubber. Enamelled coatings have been found to be far superior to other corrosion-resistant materials.

alum solutions, and acetic acid at temperatures up to 175°F.

Porcelain enamel coatings have been used extensively to protect equipment used in the reaction of dry chlorine gas with aromatic hydrocarbons at temperatures up to 320°F. Hydrogen chloride is evolved from this process and in such reactions any metal or alloy, ferrous or non-ferrous, presents an

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inhibiting or catalytic action detrimental to the properties of the reaction product. In such cases, Porcelain enamel is a pre-requisite.

Colour is unimportant. Stove tops are usually white and are subjected to surface abrasion and sudden contact with hot grease and boiling water. Pots and pans must be resistant to food acids at boiling temperatures and may be coloured or white. Also, they are subject to sudden temperature changes and impact.

A slight conception of the comparative problems involved may be had when these conditions are compared: the correct co-efficient of expansion for coating on a heavy metal section would not be suitable for a thin section like a stove top or stew pan. Likewise, the radii involved on a stew pan would be much different than those on a stove top or a heavy chemical vat.

It might be satisfactory for the surface to show a slight staining or even very slight etch on a chemical vat, but this would not do on a stove top.

While Porcelain enamels are not satisfactory for resistance to strong alkalis, it is a well-known fact that they can be made highly satisfactory for home laundry units where soaps and water softeners may create a weak alkali solution. A quantitative method of evaluation has been suggested by E. Skillicorn and J. E. Hansen. The apparatus used is similar to that employed by the Enamelled Utensil Manufacturer's Council, and has been adopted as a U.S. Commercial Standard. Typical alkali resistance of various types of enamels as determined by Skillicorn and Hansen using this test with 5% tetra sodium pyrophosphate solution is shown in Table I. The reproducibility of the test appears to be ± 0.0005 .

Results of the same test on some of the same enamels using 3% sodium hydroxide are shown in Table II.

Even though 3% sodium hydroxide is approximately equal to 5% tetra sodium pyrophosphate in available Na_2O or "caustic" content, the higher pH (higher active hydroxyl content) of sodium hydroxide makes this more destructive on the Porcelain enamel surface.

Another fundamental factor to be considered in selecting an enamel for a designated purpose is resistance to hot water.

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Hot water, particularly if under pressure, is one of the most corrosive substances known. It is axiomatic that acid-resisting enamels are for that reason not water resistant, but it is also true that all water-resistant enamels have some appreciable degree of acid resistance.

D. R. Goetchius has published considerable data on enamels, enamel testing and design of Porcelain enamelled hot-water storage tanks, says Dr. McIntyre, and has compared the corrosion resistance of Porcelain enamels under various pertinent conditions in relation to other types of metallic coatings. He stated: "The inspection of enamelled hot-water tanks which had been in simulated service showed that failure in most cases was caused by localized corrosion with large areas of the tanks still fully protected. This was not surprising, inasmuch as the early technique of enamelling tanks had not been perfected. Because the properties of enamel do not favour the formation of electrolytic corrosion cells, these failures must be attributed to the presence of defects in the enamel.

"In spite of these defects, the enamelled surface possessed a greater degree of resistance over a wider range of conditions than the galvanized tanks. The control of the water temperature is an important factor in the degree of attack on enamelled surfaces; the higher temperatures increased the severity of attack, and steam was particularly corrosive. Only a slight deposition of salts occurred on enamelled surfaces, and the tank capacity should therefore remain near the maximum throughout the life of the unit. This is not true of the galvanized tanks, because heavy salt build-up occurred under all but acid conditions.

"A fairly heavy coating of resistance enamel, free of defects, would probably have a life expectancy far exceeding that of a galvanized surface and would possibly be more adaptable to the extremes of the water conditions in water-tank use.

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- (e) good electrical resistance
- (f) dimensionally stable
- (g) low moisture absorption
- (h) low starting and running friction—particularly when lubricated by water.

The physical properties of the four principal grades are compared in the table inset. The versatility of uses to which Ferobestos Technical Plastics can be put will be readily appreciated by the profession and enquiries for literature and testing samples are most cordially invited.

FEROBESTOS TECHNICAL PLASTICS
Physical and Mechanical Properties

GRADE	BF	LA	LF	P 10
BASIS	Asbestos non-woven	Asbestos Cloth Heavy Weave	Asbestos Cloth Fine Weave	Asbestos Composition
Tensile Strength (lb./sq. in.)	18,000	7,000	12,000	9,000
Compressive Strength (lb./sq. in.)	50,000	34,000	42,000	35,000
Shear Strength (lb./sq. in.)	19,000	10,000	13,000	9,000
Cross-breaking Strength (lb./sq. in.)	23,000	11,000	19,000	15,000
Impact Strength (ft./lb.)	3	3.5	4	1.0
Fatigue Strength (tons/sq. in.)	3.75	1.0	3.25	—
Density (gm./c.c.)	1.67	1.67	1.74	1.75

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"The tests indicate that acid-resisting enamels are not necessary for use on hot-water tanks. Suitable enamels should have good resistance to frit extraction with hot water and should be unaffected by pressure tests. The chief requirements are good workability and the absence of enamel defects. The mill additions should be made so as to decrease the mill solubility."

Some of Goetchius' data are most interesting in establishing these statements. In determining solubility in hot water, under controlled conditions, an average weight loss of three or more enamelled samples in a modified Soxhlet extraction apparatus was compared with the weight loss obtained on the frits by water extraction. The data are of interest (see Table III).

A new water-resistant but non-acid-resistant type enamel was developed and tested for six weeks in the weight-loss extractor and compared with the original "A" enamel, with the results shown in Table IV.

Another factor to be considered in the choice of an enamel is resistance to weathering. Porcelain enamels have been subjected to weathering under many atmospheric conditions both as an article of utility and as controlled tests. Street signs, advertising signs, architectural Porcelain enamels of glossy and semi-matte surface structure, acid resisting and non-acid resisting, coloured and whites have all been and are being used and tested daily.

Harrison and Moore studied the weather resisting qualities of 864 one-foot-square architectural panels, representing 14 types of enamel and a like number of 4in. x 6in. laboratory specimens. This work was summarized as follows:

"The fact that Porcelain enamels can be adapted to a wide variety of specialized uses, by proper adjustments in composition, has as its corollary the fact that careful selection is required to obtain the type of enamel best suited to a given use. That weather-resisting enamels are no exception to this rule is indicated by the following summary of results obtained in a study involving 864 panels, most of which were exposed for a year at one of four locations selected to obtain a variety of climatic and atmospheric conditions.

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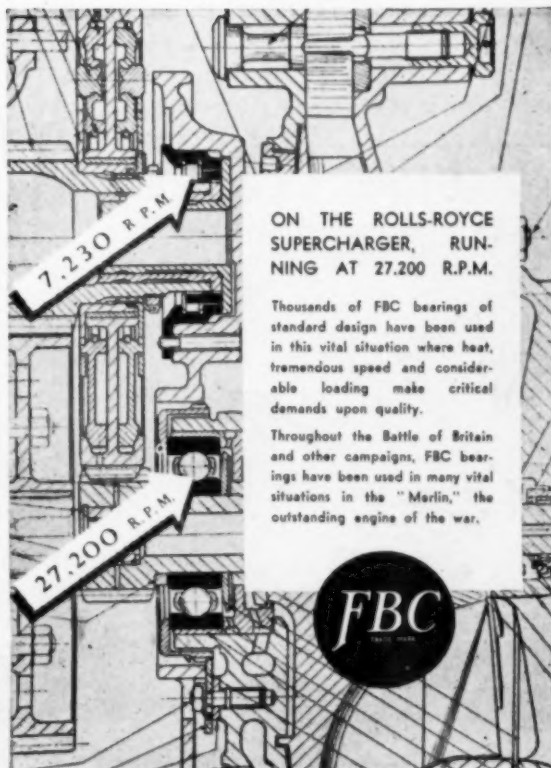
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MDG 3.X.3952

(Continued from page 36.)

1. More than half the enamels included in the investigation showed no visible effect after 1 year of exposure.

2. The acid-resisting enamels were, as a whole, distinctly more

durable than the non-acid resisting.

3. The full-matte enamels appeared to be unsuited for architectural use, where appearance is important, because of fading and difficulty in cleaning.

4. Changes in appearance of the surface of the non-acid-resistant coloured enamels were, in some instances, noticeable after the first year of weathering. These changes were in most cases associated with a pitting of the surface, probably

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resulting from the presence of acid-forming gases, such as carbon dioxide and sulphur dioxide, in the atmosphere.

5. The formation of these pits on the non-acid-resistant enamels was prevented or inhibited by the application of a thin over-glaze of clear, acid-resistant enamel.

6. Weathering was more pronounced at those locations where there was a relatively high concentration of combustion gases and least severe where there was a practical absence of these gases in the atmosphere.

7. In all cases, where visible effects of weather occurred, the changes were confined to the enamel surface only. In no case was there any failure of the enamel coating to protect the underlying iron from rusting."

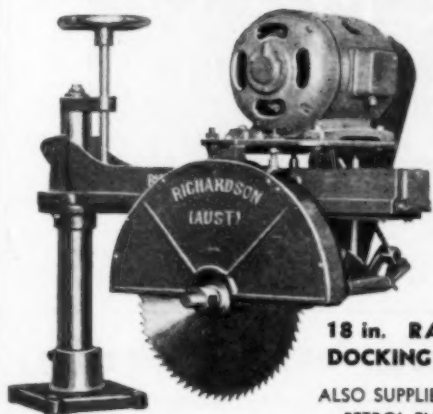
These conclusions have been fairly well substantiated by similar test work of the Ferro laboratories. It has been determined that glossy, acid-resistant type enamels are extremely resistant to weathering. Other types of enamels can also be made weather resistant but are not necessarily classed as highly acid resistant.

In 1932 this laboratory concluded, on the basis of Weather-O-Meter tests conducted continuously from April 26, 1932 until August 10, 1932, that:

1. All Porcelain enamels are extremely resistant to weathering. Compared with the average paint, the life of Porcelain enamel should be from ten to twenty times greater.

(Turn to page 68.)

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Telegrams: "VICWELD," Melbourne.

Western Australia: ATKINS, LTD., Hay Street, Perth.

Queensland: EVANS, DEAKIN & CO., Brisbane.

South Australia: POWER PLANT, LTD., 100 Currie Street, Adelaide.

INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

STAPLING OR STITCHING MACHINE FOR CARDBOARD CONTAINERS: N.Z. firm desires to contact an Australian organisation making or supplying a machine suitable for stapling or stitching the bottom flaps of conventional four flap type corrugated cardboard containers. All containers are of square sections varying between 12 in. and 18 in. square. Some 100-175 such containers have to be handled every day. Write Ref. 8336, c/o this paper.

ELECTRIC DRY SHAVER: Ref. 8337: The Agent in Australia for the "Arvin Sernal" electric dry shaver, made by Arvin Electric Ltd., of Essex, England, is Thom & Smith Ltd., Botany Road, Mascot, N.S.W.

DIESEL ENGINE:—150 H.P. Twin Vertical "Pettiers", 330 R.P.M. Can be inspected, running. First-class order. Write to Ref. 8577, c/o "The Australasian Manufacturer."

BARE COPPER WIRE FOR SALE: Sydney firm has for sale a quantity of bare copper wire on standard reels. Particulars are as follows: 1316 lbs., bare copper wire, 0124 G on 2½ to 7 lb. reels. If interested write Ref. 8338, c/o "The Australasian Manufacturer."

FILTER PRESS, BALL MILLS WANTED: Porcelain manufacturer requires either new or second-hand:—Filter Press, capacity up to 21 tons Plunger, up to 7 ft. diameter; Ball Mills, up to 7 ft. diameter. Particulars to Ref. 8339, c/o "The Australasian Manufacturer."

STEEL FOR SALE: Melbourne manufacturer has for sale, in various sizes, steel in the following qualities:—Carbon, Nickel (Oil and Case Hardening), Chrome Moly and Stainless. Write to Ref. 8341, c/o "The Australasian Manufacturer."

WANTED, ENGINEERING BUSINESS: General Engineering business with good equipment in Melbourne or Suburbs. Short lease premises no objection, an advertiser will have new factory available next year. Possible partnership or employment of existing owners considered. Fullset particulars of lines handled, equipment, premises and past financial records, in strict confidence to:—"Engineer", c/o "The Australasian Manufacturer", 197 King Street, Melbourne.

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Completely Modern Continuous Furnace with Capacity
Available for Sheet Metal Enamelling

Continuous Basis Preferred

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MEDIUM AND HEAVY FORGINGS: Manufacturer desires to contact an organisation in a position to supply medium and heavy forgings (crankshafts, etc.). Write to Ref. 8340, c/o "The Australasian Manufacturer."

HEAVY DUTY CROPPING SHEARS: Adelaide firm wants to purchase a heavy duty cropping shear suitable for cutting scrap steel for use in foundry cupola. Write to Ref. 8334, c/o "The Australasian Manufacturer."

CAPSTAN LATHE CAPACITY AVAILABLE: Melbourne firm has capacity available on capstan lathe up to 1 in. Write to Ref. 8332, c/o "The Australasian Manufacturer."

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56 KW Bell Type Electric Furnace with double base. Internal measurements approximately 6ft. by 4ft. by 4ft. For inspection and further particulars, apply: **LINDBERG FOSTER DISPLAYS PTY. LTD.**, 548 Church Street, RICHMOND, VIC. Phones: JB 1834-8.

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Telephone: FW 2111



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Relief Valves
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FOR ALL TRADES

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14-16 St. Francis St., Melbourne

Phone: C 3613

TASMANIAN AGENCY—"THE AUSTRALASIAN MANUFACTURER": The publishers of this Journal desire to appoint an advertising and subscription Agent in Tasmania. Remuneration will be on a commission basis. Full details on application to Ref. 8333. c/o "The Australasian Manufacturer."

HOSPITAL EQUIPMENT—MANUFACTURING OPPORTUNITY: An American Company specialising in the manufacture of certain types of hospital equipment, particularly resuscitators, is interested in the possibility of a licensing arrangement with an Australian firm, whereby its trademark and patents would be used in similar equipment manufactured and distributed in Australia. Firms interested in this inquiry, write to Ref. 8335. c/o "The Australasian Manufacturer."

PAPER CONVERTING FACTORY—PARTNERSHIP DESIRED: A South African Paper Processing Company is desirous of establishing a factory in Australia for the manufacture of serviettes, facial tissues, toilet rolls, d'oyeys and crepe paper, etc., and is interested in partnership or other form of business association with a similar existing establishment in this country. Write to Ref. 8336. c/o "The Australasian Manufacturer."

WATER TAPS AND TOOL-POST LATHES: Firms who are interested in the manufacture, under licence, of a patented two-piece water tap, and/or a tool-post for lathes, said to excel existing types, are invited to write to Ref. No. 8312. c/o "The Australasian Manufacturer."

PASSIONFRUIT PULP—EXTRACTION MACHINE WANTED: Makers of machines for extracting Passionfruit Pulp are asked to write to Ref. No. 8327. c/o "The Australasian Manufacturer." We understand that this machine consists of a vacuum pump and a container with a suitable nozzle, against which the halves of the Passion Fruit are placed, and the pulp is then extracted into the container in which a vacuum is maintained by a small pump.

ALUMINIUM AND BRONZE METAL POWDERS—PRODUCTION IN AUSTRALIA: Having disposed of their interest in an English Company which manufactured aluminium and bronze metal powders, the former Works Manager, who was also a Director, along with another shareholder, are desirous of transferring some of their own machines to Australia and manufacturing these powders in this country. They are interested in partnership or other form of business association with a similar existing establishment in this country. Firms interested in this proposition write to Ref. 8330. c/o "The Australasian Manufacturer."

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AND COSTLY MAINTENANCE
THROUGH . . .**

Dynamic Balancing

LIKE THIS

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● The cost of doing without dynamic balancing to the cost of high machine maintenance and impaired output and overall efficiency.

The forces set up by out-of-balance rotating parts play havoc with bearings . . . set up excessive strains on machine frames . . . cause vibrations injurious both to machine and quality of machine product.

Our Service, for machine builders and plant engineers, is available for accurate dynamic balancing of all types of machine parts, electric motors and generators.

We shall be pleased to supply further information without obligation.

JONES & RICKARD PTY. LTD.

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W.A.: Messrs. Wignores Ltd., 613 Wellington St. Perth, (BA228).

S.A.: Power Plant Ltd., 100 Currie St. Adelaide, (Cent. 6433).

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(PATENT APPLIED FOR)

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WALL AND FLOOR TILES: New Companies manufacturing Wall and Floor tiles are requested to write to Ref. 8331, c/o "The Australasian Manufacturer."

NEW FACTORY REGISTRATIONS

NEW SOUTH WALES.

Avoca Upholsterers, 210 Parramatta Road, Stanmore—Upholstery.

Syta Crate Co., 11 Roger Street, Brookvale—Dairy Machines.

Tradition Furniture Co. Pty. Ltd., 147 Regent Street, Sydney—Furniture.

S. G. Ungley & Sons Pty. Ltd., 1-7 Belmore Street, Surry Hills—Sheet Metal Work.

Superb Knitteds, 418 King Street, Newtown—Knitted Goods.
Walton Engineering Pty. Ltd., Boundary Road, Peakhurst—Sheet Metal Working.

F. E. & D. Ward, cnr. Victoria Road and Cowell Street, Gladesville—Leather and Plastic Products.

M. A. Waters & Co. Pty. Ltd., 43 Bedford Street, Newtown—Leathergoods.

Horace J. Watson, 6 Margaret Street, Merrylands—Shop and Office Fittings.

Gwen-Lou, 40 Canterbury Road, Bankstown—Baby Soft Shoes.

Tresto Products, Hill Street, Granville—Electrical Mfg. Goods.

E. T. Wilson (Tanners) Pty. Ltd., 312 High Street, Willoughby—Tanners.

Wood & Moynihan, 27 Trafalgar Street, Belmore—Coachbuilding.

No Sag Mattress Spring Mfrs., 8 Dick Street, Balmain—Mattress Springs.

VICTORIA.

Chambers, E. H. & Kiellerup, A. O., Footscray Road, South Kensington—Plastics.

Darby, M. J., cnr. Cannon and Wright Streets, Sunshine—Plaster Products.

Herculath Pty. Ltd., 173 Grange Road, Fairfield—Fibrous Plaster Sheets.

Lawson, F., 3A Murray Street, Prahran—Locks.

Sanderson, M. A., rear 4-6 Glenferrie Road, Hawthorn—Upholstery.

Williamson, M. J., Moore Street, Kaniva—Cement Articles.

Industrial Companies and Firms

NEW SOUTH WALES.

ATKINSON, J. & E. LTD.—
Capital: £450,000. Manufacturers

OPERATION "FACELIFT"

In a few weeks factories will be closing for the holiday period. Then all the hundred and one jobs of maintenance, repair and rehabilitation will have to be done so that the factory will be able to keep going in 1951 with the minimum of interruption.

The next month will be a busy time for engineers, mechanics, carpenters and — painters.

See that your painter has a plentiful supply of Swiftvulc Chlorinated Rubber Base Paint on hand. Here are just a few of the jobs for which Swiftvulc is ideal.

● Painting Machinery

Painting machinery and plant with Swiftvulc will help to prolong its life. It will keep out the effects of rust, corrosion, chemical fumes, acids, etc.

● Painting Iron and Steel Work

Swiftvulc Chlorinated Rubber Paint is specially prepared for painting of iron and steel work where a paint is required which will resist the destructive action of acids, alkalis, chemical-laden steam and fumes, gases, etc.

● Painting Walls and Ceilings

Swiftvulc is available in a wide range of colours for painting the walls and ceilings of your factory. There may be parts of woodwork, brick, metal or cement where acids have left what appears to be a permanent mark, but Swiftvulc can be applied to such surfaces and can eliminate all traces of these acids. Swiftvulc can be used immediately on new asbestos structure without first applying a neutraliser or sealer. Swiftvulc has a good covering capacity, too—approximately 700 square feet per gallon.

● Painting Surfaces Subject to Damp

In some factories there are surfaces which, through the peculiar conditions of the industry or the site of the plant, are subject to dampness. In such cases, Swiftvulc can be used to remove all traces of damp and it will continue to minimise the inroads of dampness.

Swiftvulc will waterproof asbestos cement.

SWIFTVULC

is available in the following colours:

Ferric Red, Cream, Silver, Grey, Orange, Black, Clear, White.

Stocked in 4-gall. drums, 1-gall. and ½-gall. tins

A Product of

SWIFT RUBBER PTY. LTD.

31 Queen Street, Melbourne
MU 7744-5

Interstate Agents:

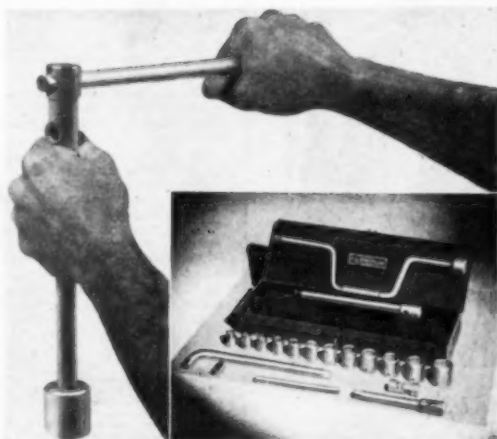
SYDNEY: National Plastics Trading Co., 25 Carlisle Street, Ashfield.

BRISBANE: International Traders, 228 Roma Street.

ADELAIDE: Nu-Roof and Paint Distributors, Francis Street.

PERTH: Nu-Roof (W.A.) Pty. Ltd., Economic Chambers, William Street.

for those TOUGH JOBS



Make it easy
with

AUSTALOY TOOLS

Heavy duty jobs need heavy duty tools. Austaloy Socket sets—manufactured from highest grade steel—will make those difficult jobs much easier. They come to you in a tool case of heavy gauge steel with provision for locking. Austaloy Socket sets are available in a variety of different sizes for S.A.E., Whitworth and B.S.F.

Illustrated is the S.A.E. set No. 3, which includes 12 sockets—from $\frac{1}{8}$ in. to 1 $\frac{1}{8}$ in.—Connector, Universal Joint, 6in. extension, 10in. extension, tommy-bar, offset handle and braces. Other sets with different combinations of sockets, etc., are also available.

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of soap, perfumery, essences, toilet articles, etc. Head Office: London, England. N.S.W. Agent: Roy J. St. Clair, Reynolds Street, Balmain.

CEMENT PAINTS PTY. LTD.
—Capital: £10,000. Manufacturers of coloured cements, cement paints, tile toppings, etc. Subscribers: Becalelis Svirskis and Colin Biggers. Registered Office: 16 Barrack Street, Sydney.

CLAYS & MINERALS PTY. LTD.—Capital: £10,000. Clays and minerals' manufacturer. Subscribers: Becalelis Svirskis and Colin Biggers. Registered Office: 16 Barrack Street, Sydney.

TOGGERY PTY. LTD.—Capital: £2,400. Dress accessories, buckles, buttons and fancy jewellery manufacturers. Subscribers: Margot M. Graff and Hans Lazar. Registered Office: Sydney. (Lodged by M. J. Champion, 2b Castlereagh Street, Sydney.)

UNIVERSAL FIRE BRICK CONSTRUCTION PTY. LTD.—Capital: £2,000. Manufacturer of bricks, fire bricks, tiles, pipes, earthenware, etc. Subscribers: James A. Ware, George M. Koerber, Stanley Lawson and Henry T. Pierson. Registered Office: 19 Belgium Street, Auburn.

VICTORIA FLAT-TOP ROOFING CO. (Don Campbell Ltd.).—Capital: £10,000 in £1 shares. Subscribers: A. E. Middleton, J. G. Tuxem.

UTAH CONSTRUCTION CO. (U.S.A.).—Victorian Agent: A. J. MacArthur, 46 Queen Street, Melbourne.

PIONEER CHEMICAL INDUSTRIES LTD., Coburg.—Capital: £10,000. Subscribers: D. Anderson, E. J. Cousins, L. J. Amos, G. D. Jones, J. Knoch.

RUTHERFORD MEMORIAL SCHOLARSHIP.

The launching of a £200,000 scholarship fund to assist young scientists throughout the British Commonwealth was announced during the past week by Professor Marcus Oliphant, world-famed Australian nuclear fission physicist at the National University at Canberra. The scholarships are to commemorate the late Lord Rutherford, who has aptly been described as the "father of the atom." For it was his research, more than that of any other scientist, which ultimately led to the splitting of the atom. "It is certain," Professor Oliphant remarked recently, "that if Rutherford had not lived, the discovery of atomic energy, with all its possibilities for good and evil, would not have been made for some time to come."

The appeal emanates from the Royal Society, London, it being expected that the bulk of the money will be raised in England with Australia contributing upwards of £15,000. Australia will do well to honour fittingly this great son of the sister Dominion of New Zealand, and to honour him in the most effective of all ways—by making facilities available for young scientists to follow in his footsteps.



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WHEN IT'S WELDING, AUSTRALIA'S BASIC INDUSTRIES LOOK TO LINCOLN

A LINCOLN ARC-WELDED JOB DEAERATOR

BUILT BY
THOMPSONS
(CASTLEMAINE) LTD.



USING LINCOLNWELD AUTOMATIC AND SEMI-AUTOMATIC PROCESSES

Illustrated is a large welded steel container—a Deaerator—recently constructed for the Pyrmont Power House by Thompsons (Castlemaine) Ltd. It is typical of the Class 1 and Class 2 Pressure Vessels produced by this firm—a range which includes petroleum processing plant, power-house equipment, digesters for paper manufacture, high pressure chemical storage tanks.

To meet the rigid physical test requirements of the ASME, Lloyd's and similar codes, welding of the highest quality is called for. This weld perfection has been attained in the most

economical way by the extensive use of the Lincolnweld Automatic and Semi-automatic processes. Travel speeds with these processes are as much as ten times faster than with conventional methods.

As an example of these advanced techniques, the Deaerator shown was welded at the rate of approximately 13" of butt joint per minute. The shell is of $\frac{1}{2}$ " plate, and all welding was conducted without plate edge preparation. Physical properties of the weld are excellent.

Look to LINCOLN —

FOR BETTER WELDING MACHINES—ELECTRODES—PROCEDURES

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PYROX DEVELOPMENTS.

The Annual Report of the Directors of Pyrox Ltd., states that the Directors were striving to develop the business of those overseas companies which they represented in Australia.

Development had been satisfactory, and the contracts secured had made a substantial contribution to the company's income.

Manpower shortages and higher costs had set difficulties in manufacturing.

In some of the company's products strong overseas competition accentuated these problems.

For instance, the market was oversupplied with English spark plugs, but Pyrox Ltd.'s sales were increasing.

Substantial orders had been received from America.

The company hoped to share substantially in the development of Victorian brown coal resources, the chairman, Mr. August Hoette, said.

Dr. Oetken, head of the Lurgi companies which Pyrox represents in Australia, would visit Australia in March next year, to talk with the Victorian Government and the Gas Corporation.

ELASTIC WEBBING INCREASING OUTPUT.

At the annual meeting of Elastic Webbing Ltd., the Chairman, Mr. M. Plotkin, said that the Directors intend to increase capacity to cater for the whole Australian market in some lines of elastic narrow fabrics, also to cater for export markets definitely available.

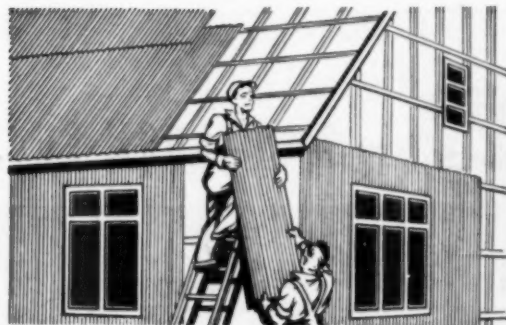
Articles never before made in Australia, but in demand here, would also be made, he said.

New production peaks had been reached with covered rubber thread, with shift work now round the clock.

ENGINEERING CO. FORGES NEW OVERSEAS LINKS.

Mr. H. G. Ferrier, chairman, announced at the recent annual meeting of Federated British Engineers (N.S.W.) Ltd., that in February next Mr. J. R. Lang, chairman of the Weir Housing Corporation of Conbridge, England, is to visit Australia. "He may," he added, "arrange the supply of Weir prefabricated homes to Australia. He is also director of G. and J. Weir Ltd., associated with Federated British Engineers (N.S.W.). Another British company, W. H. Allen, Sons and Co. Ltd., of Bedford, naval contractors, have joined the organisation. Arrangements have thus been made for the company to manufacture specialised marine machinery. The company has begun making in Australia specialised engineering equipment for defence needs. For this the most modern plant and equipment will be available when the St. Leonards (N.S.W.) factory, which should be in operation by June, is completed."

Corrugated Aluminium Building Sheets



For speed of erection

Corrugated Aluminium Building Sheets have many advantages over other roofing and siding materials. The lightness of the metal enables easier handling, with a considerable saving in trans-

portation and erection costs. It is highly resistant to corrosion, and reflects a high percentage of all radiant heat. Painting is not necessary, and no special maintenance is required.

Corrugated Aluminium Building Sheets are available as listed below.

Widths: 26 in. with eight 3 in. corrugations.
32 in. with ten 3 in. corrugations.
26 in. with nine 2½ in. corrugations.
31 in. with eleven 2½ in. corrugations.

Lengths: 6, 7, 8, 9, 10, 11 and 12 ft.

Thicknesses: 20, 22, 23, 24 and 26 Imperial Standard Wire Gauge.

ALUMINIUM UNION LIMITED

(Incorporated in the Dominion of Canada)
Principal British Commonwealth Distributor of Aluminium
Ocean House, 34 Martin Place, Sydney, N.S.W.

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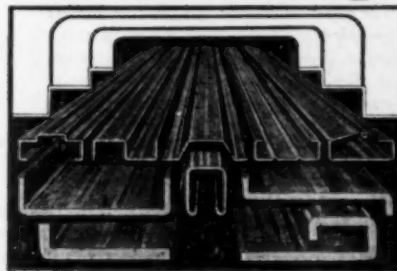
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PRESSINGS for industry



Any Size or Shape. Pressings of any size or shape up to ½" gauge and 15' length can be supplied from our 500-ton brake press, to meet the varying needs of manufacturers.

Quick Delivery.

All inquiries are promptly attended to; deliveries of orders are immediate.

Advisory Service.

A special technical advisory service is available to clients. Write, call or 'phone:—

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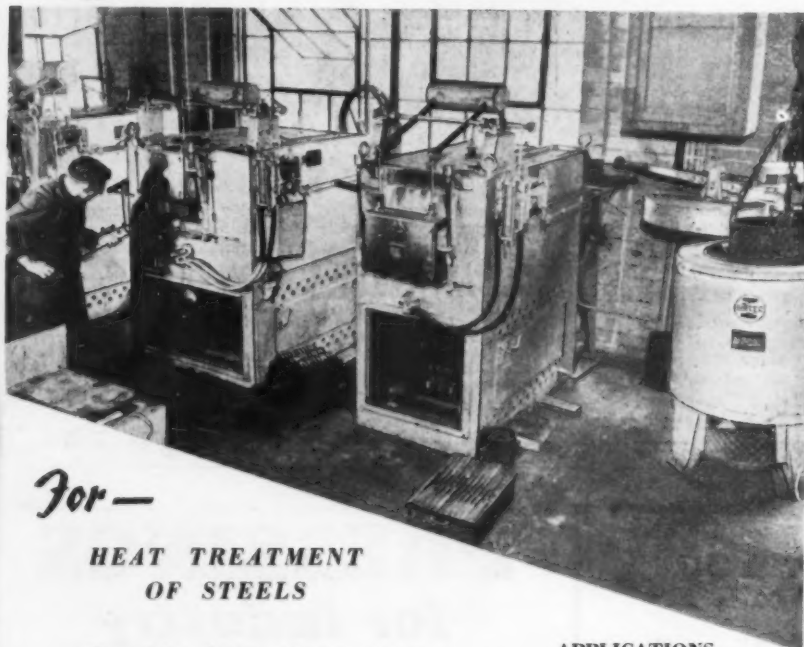
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HEAT TREATMENT OF STEELS

The rapid production and uniform heating provided by Birlec Tool Room Furnaces are ideal conditions for the heat treatment of dies, tools and stressed components generally, in all types of alloy steel. Automatic temperature control ensures consistent results.

Birlec Tool Room Furnaces can show you substantial advantages both in operating costs and quality of product. Send for descriptive literature.

APPLICATIONS

- Hardening
- Case hardening
- Carburising
- Annealing
- Normalising
- Tempering

Above—A Birlec Tool Room Installation
at Emmco Works, Waterloo, N.S.W.

BIRLEC LTD.
(Incorporated in England)

51 PARRAMATTA ROAD, GLEBE, N.S.W.
MELBOURNE OFFICE — 415 LONSDALE ST.



Agents: ADELAIDE—Unbehaun & Johnstone Ltd.; BRISBANE—Alfred Snashall, Anthon Pty. Ltd.; PERTH—Eagle & Globe Steel Co. Ltd.
WELLINGTON, N.Z.—H. P. Wrigley, G.P.O. Box 1136.

THERE'S A BIRLEC FURNACE FOR every HEAT TREATMENT AND MELTING PROCESS

FLAX SUBSIDY.

The Minister for Defence, Mr. P. A. McBride, representing the Minister for Trade and Customs, Senator N. O'Sullivan, last week introduced into the House of Representatives a bill to provide a subsidy for the manufacture in Australia of woven flax canvas fire hose from materials grown and processed in Australia. The bill—the Flax Canvas Bounty Bill—provided for a bounty not exceeding £30,000 a year for two years.

The bounty would apply only to flax canvas manufactured for sale and use in the Commonwealth.

Mr. McBride said the Tariff Board did not favour protecting the woven flax industry by imposing tariff duties, but recommended that the flax spinning and weaving industries be assisted by reducing the price of their raw material—scutched fibre—by an amount equivalent to sixty pounds a ton for "C" grade tank-retted flax.

NEW FACTORY FOR V.I.A. LTD.

Victoria and Interstate Airways Ltd., of Essendon, Vic., is increasing its capital. The Company manufactures motor bodies, housing units and aircraft parts. The new capital is to meet the cost involved in the erection of new factory premises.

KELVINATOR EXPANSION.

The property of Whittingalowe Engineers in Port Road, Cheltenham, Adelaide, has been acquired by Kelvinator (Australia) Ltd.

The move will provide additional floor space for expansion of Kelvinator's production.

Whittingalowe employees, numbering about 50, have been asked to continue in Kelvinator employment.

U.S. INDUSTRIALISTS SEEK FACTS ON AUSTRALIA.

An important visitor to Australia is Mr. Walter Sternberg, a Chicago lawyer who is in this country to explore the possibilities of establishing enterprises for the manufacture of radio, electronics, and television equipment. He is acting on behalf of a group of American industrialists who are considering the investment of several millions of dollars. "American capital," said Mr. Sternberg, "is looking eastward, especially to Australia, for expansion. My assignment is to investigate the potential market, raw material supplies and factory sites. We realise, of course, the biggest obstacle to setting up here is shortage of labour."

"The Manufacturer" wishes Mr. Sternberg well in his quest, hoping ways will be found of overcoming the difficulties which present themselves. For this country is waiting to extend the warmest of warm welcomes to additional United States manufacturing industries.



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In thanking you for support and co-operation received in the past, we look forward to being of even greater service to you in the future and can confidently assert that the Demco organization is better equipped than ever to meet the many and varied needs of the Engineering industry.

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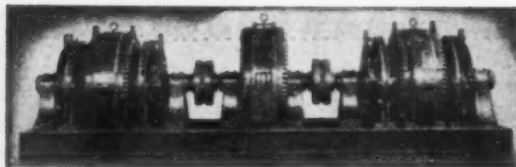
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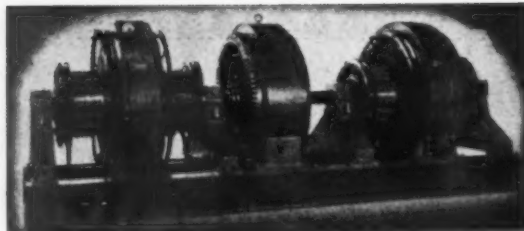
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(Above): Old-style motor-generator set, with each generator rated at 6,000 amp. at 6 v. Note massive construction with liberal use of cast-iron and the general inaccessibility of the various units for service.
(Right): Modern motor-generator set, with two 7,500-amp., 15 v. generators, reconnectable to deliver 3,750 amp. at 30 v. Note easy accessibility and all-welded, fabricated steel construction.



Power for Plating

The Right Type of Power Source for Electrolytic Processes

Electric power is the heart of the plating operation. It controls the operating continuity of an investment many times greater than itself, and any part of an operation that is so critical to the continuity of the operation as a whole deserves the most careful consideration in its application and use.

THE oldest, and time-proved, power source of the plating industry is the heavy-duty motor-generator set. It dates back to the beginning of the industry and enjoys the reputation of being the most reliable source of electric power.

The selenium rectifier was introduced in Europe many years ago, and several other types of dry-plate rectifiers have been available in this country. They did not gain a sizable foothold in the electroplating industry prior to World

War II, because of the excellent reputation that m-g sets had built over the years. Many claims were made for rectifiers but no operating installations of any consequence could be shown to demonstrate and prove the points claimed for them.

During the last war, the electroplating industry really came of age. Generator manufacturing capacity was taxed to the limit. Under these conditions, the rectifier succeeded in entering this market, and it contributed greatly to the war effort. During the post-war period, generator manufacturers were still unable to meet the demand, opening the way for more and more rectifiers into the electroplating industry.

Unfortunately, as is usually the case under extreme emergency conditions, the rectifier was misapplied in as many or more places than it was applied properly. This misapplication, says E. G. Schroeder, in "The Machinist", has carried over into present practice. However, experience gained during the war years and the immediate

post-war emergency period demonstrated that there is a definite place for the rectifier in electroplating.

To determine whether an m-g set or a rectifier should be used as the power source involves the evaluation of seven major factors: (1) Initial Cost, (2) Voltage Regulation, (3) Operating Efficiency, (4) Power Factor, (5) Mounting Space Required, (6) Installation Costs, (7) Flexibility.

INITIAL COST.

The largest single factor in favor of the rectifier is its lower cost in the smaller ampere capacities. However, the first cost of the equipment is dependent upon the load curve of the particular plating operation.

Suppose the load curve looks like that shown in the accompanying illustration. The short-time overload between points A and B could be handled safely by a rectifier, but not the one shown between points C and D. A rectifier is suitable for short-time overloads, but not for continuing

overloads. If no overloads exceed the one indicated between points A and B, a 1500-amp rectifier would be more economical than an m-g set, for this particular operation.

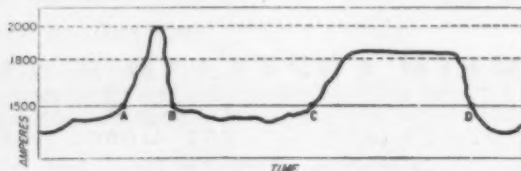
However, if the overloads are of the nature indicated by the curve between points C and D, the rating of the rectifier would have to be increased to the peak rating of the long-period overload. This would mean 1800 amp or a standard 2000-amp rectifier. But, because of the inherent overload capacity of the m-g set, a 1500-amp set would be entirely satisfactory and a better proposition.

VOLTAGE REGULATION.

The inherent voltage regulation of any rectifier is relatively poor as compared with an m-g set. This is particularly important because



Selenium electroplating rectifier rated at 2,000/1,000 amp. at 6/12 v. Interior construction features a heavy-duty stack for long, trouble-free service.



Load curve for plating installation is a reliable guide in deciding whether a rectifier or an m-g set should be used.

How Does the Job Affect Choice?

	MOTOR GENERATOR	RECTIFIER
Intermittent duty	No	Yes
Power factor correction	Yes	No
Small ampere ratings	No	Yes
Adverse ambient conditions	Yes	No
Close voltage regulation required	Yes	No
Very short time overloads	Yes	Yes
Overloads of longer duration	Yes	No
Larger kw capacities 6 v and above	Yes	No
3000 amp and above	No	Yes
Roof or wall mounting	No	Yes
All automatic plating machines	Yes	No

the voltage on the tank directly affects the current density. In cases where the work may burn under excessive current density the voltage must remain as nearly constant as possible, and such cases are natural applications for the m-g set. This is especially true where the load is variable and the operator must be constantly on the alert to see that the voltage is maintained at a constant value.

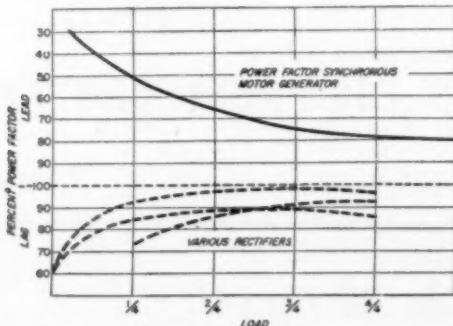
OPERATING EFFICIENCY.

This is a point of extreme importance as it affects operating costs and is probably given less consideration by the average plater than any other part of the power application problem. Consideration must be given to the total number of kilowatts of power involved before efficiency can be given its proper evaluation. For example,

lifetime efficiency which does not change with age, regardless of operating or ambient conditions of the installation. The larger the installation in terms of kilowatts of power, and the longer the hours of operation per day, the more the installation favors the m-g set. Conversely, smaller amounts of power on a shorter day or intermittent operation favor the rectifier.

POWER FACTOR.

In general, power factor affects the cost of operation because poor power factor generally increases the demand charges of the power company, represents excessive loss of power and overheating of distribution cables within the plant and, in many cases, necessitates rewiring and rearranging the plant because of apparently overloaded cables.



Power-factor correction can be aided by m-g sets. Rectifiers do not operate at poor power factor, but do not improve existing conditions.

1000 amp at 6 v represents a dc power output of only 6 kw. Where the power involved is that small, efficiency becomes quite insignificant. However, if a larger installation of say 10,000 amp at 9 v is considered, this represents a dc output of 90 kw and efficiency then becomes an important factor.

It must be recognised that all rectifiers, regardless of type or make, are subject to ageing and consequent loss in efficiency. Despite all claims, no fixed pattern can be set up to determine this exactly. It will vary over extremely wide limits, depending on the way the rectifier is used. Loss in efficiency is a direct function of the total heat to which the units are subjected. This means that two variable conditions are present: the load applied to the rectifiers, and the ambient conditions. In contrast, the m-g set has a def-

inite lifetime efficiency which does not change with age, regardless of operating or ambient conditions of the installation. The larger the installation in terms of kilowatts of power, and the longer the hours of operation per day, the more the installation favors the m-g set. Conversely, smaller amounts of power on a shorter day or intermittent operation favor the rectifier.

MOUNTING SPACE REQUIRED.

Any space taken by equipment cannot be utilized for production

Typical Plating Processes and Equipment Consideration

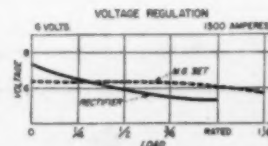
PROCESS	EQUIPMENT	MOTOR GENERATOR	RECTIFIER
COPPER, ACID	Hand tank	No	Yes
	Semi-automatic	Yes	No
	Automatic machine	Yes	No
COPPER, CYANIDE	Hand tank	No	Yes
	Semi-automatic	Above 5000 amp	Below 5000 amp
	Full-automatic	Yes	No
NICKEL	Hand tank (Small)	No	Yes
	Hot line	Yes	No
	Semi-automatic	Yes	No
CHROME	Hand tank	No	Yes
	Hot line	Yes	No
	Automatic machine	Yes	No
CADMIUM	1 to 2 Barrels	No	Yes
	4 Barrels and above	Yes	No
	Racked parts	Not used extensively... usually small setups that favor rectifiers.	
*ZINC, CYANIDE ACID	1 to 2 Barrels	12 v No	Yes
	3 Barrels and above	Yes	No
	Racked parts:		
	Hand tank	No	Yes
	Semi-automatic	No	Yes
	Full-automatic	Yes	No

and represents a definite fixed overhead cost. As a general rule, in small amounts of power, the rectifier will mount in a smaller space than the m-g set. As the installation is increased and it is necessary to add a number of rectifier units, this saving disappears. Usually, in ratings above 5000 amp at 6 or 9 v, the m-g set occupies less floor space than a large number of single rectifier units. Certain companies manufacture larger capacity, single rectifier units, but these are not standard. They are manufactured to order and represent little savings over the m-g set in the first cost of the equipment.

INSTALLATION COSTS.

As a general statement, a single rectifier unit can be installed more economically than a single m-g set because it is usually recommended that a base be provided for the latter, whereas the former can be

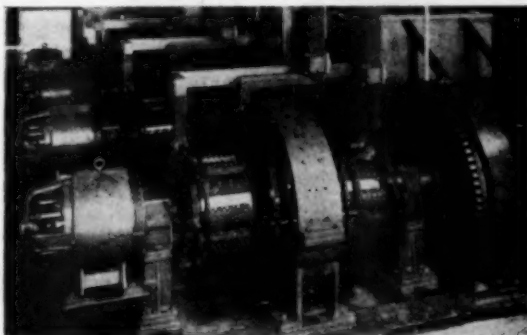
set on an uneven floor or mounted on brackets or some other lighter type of construction. However, when it is necessary to install a number of rectifier units, the cost of the base for the m-g set is more than offset by the fact that it is



Voltage-regulation characteristics of the m-g set are superior to those of the rectifier and may be the deciding factor.

necessary to bring in an individual power line and some type of disconnecting switch to each of the individual rectifier units. Installation and wiring costs increase very

(Turn to page 51.)



Large plating installation rated at 40,000 amp. Each motor generator set has a full-load rating of 10,000 amp. at 9 v.



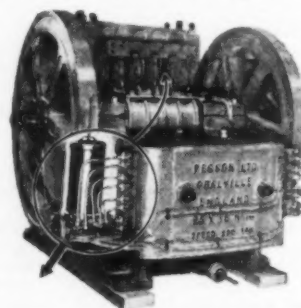
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(Continued from page 49.)

materially whereas, in the case of the m-g set, regardless of its size, it is necessary to bring in only one power line and mount one disconnecting switch.

Tying in with the previous consideration of the space factor, it is often necessary to mount equipment in a less advantageous spot because of crowded conditions. For example, it is common practice in smaller shops to mount power equipment on the second floor or on the roof. The amount of floor or roof loading permissible must be considered. Usually the equivalent rectifier capacity will be lighter than the m-g set, because the rectifier employs less steel and copper. In certain restricted installations of this type, it is necessary to go to the rectifier unit, despite all other considerations, if it is found that the second floor or the roof is not sufficiently strong to carry the heavy concentrated loading imposed by an m-g set.

The installation of equipment must also be considered a part of its first cost because it is not until the equipment is operating that it is actually ready for service. The successful operation of a rectifier depends to a much larger extent on its location than does an m-g set.

Rectifier stacks are subject to closing off of the ventilating system where the atmosphere is extremely dirty. The plates are also subject to considerable corrosion and shortened life due to excessive moisture and corrosive fumes. It is recommended that, wherever possible, a rectifier be located separately from the plating setup and ventilated with clean, cool air.

General practice has been to locate the m-g set adjacent to the plating tank. This considerably shortens the bus run and not only cuts down on the cost of copper for installation but also reduces operating power loss in the bus and improves voltage regulation at the tank. While it is to be recognized that any piece of equipment, m-g or rectifier, will have better life if located in a separate room, the effect of adverse ambient condition on the m-g set is much less.

FLEXIBILITY.

The question of flexibility is becoming increasingly important with the changing conditions that are always present and becoming more prevalent in the plating industry. The rectifier has the advantage of



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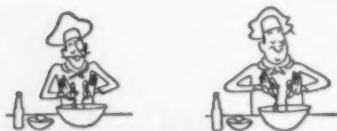
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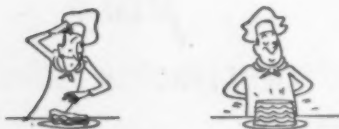
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being immediately available as a standard packaged unit for operation in parallel with another rectifier unit, not necessarily of the same type or ampere capacity, when load conditions change. Partially to offset this is the fact that the m-g is suitable for considerable overload not possible in the rectifier and does provide the margin of safety in its conservative overload ability to provide additional output when the type of work changes or the installation subsequently is enlarged.

After Business Hours

(Continued from page 2.)

France, in Italy, and in Germany.

His all-absorbing interest, however, was peace—national peace and international peace. To this cause he devoted most of the time he could spare from his multifarious activities.

The heart and the mind of the man glow vividly forth from the pages of his will, the means he used to advance the interests of the five domains of human endeavour he held in highest esteem—Physics, Chemistry, Medicine, Literature, and Peace. After enumerating a number of small legacies, his will proceeded: "With the residue of my convertible estate I hereby direct my Executors to proceed as follows: They shall convert my said residue of property into money, which they shall then invest in safe securities; the capital thus secured shall constitute a fund, the interest accruing from which shall be annually awarded in prizes to those persons who shall have contributed most materially to benefit mankind

during the year immediately preceding. The said interest shall be divided into five equal amounts, to be apportioned as follows: One share to the person who shall have made the most important discovery or invention in the domain of Physics; one share to the person who shall have made the most important chemical discovery or improvement; one share to the person who shall have made the most important discovery in the domain of Physiology or Medicine; one share to the person who shall have produced in the field of literature the most distinguished work of an idealistic tendency; and, finally, one share to the person who shall have most or best promoted the Fraternity of Nations and the Abolishment or Diminution of Standing Armies and the formation and increase of Peace Congresses."

His fortune, which has been estimated at approximately £2,000,000 sterling, carries on, and will continue to carry on, the lofty ideals and the noble aspirations of this great Swedish inventor-philanthropist.

JOHNSON'S LEATHER ACQUISITIONS.

Johnson Leather Co. Ltd., tanners and shoe manufacturers, has acquired the following businesses:

Broadcast Investments Pty., 258,085 shares, plus £6 cash for all the company's shares. The company controls Thomas Broadcast Pty. Ltd., an old-established tanning business in Victoria.

Mitchell Engineering Co. Pty. Ltd., tannery machinery and equipment makers, 8,800 shares, plus £90 cash for 2,000 ordinary shares.

S. P. Reynolds Pty. Ltd., tanners, of Victoria, 70,000 shares for the entire business.



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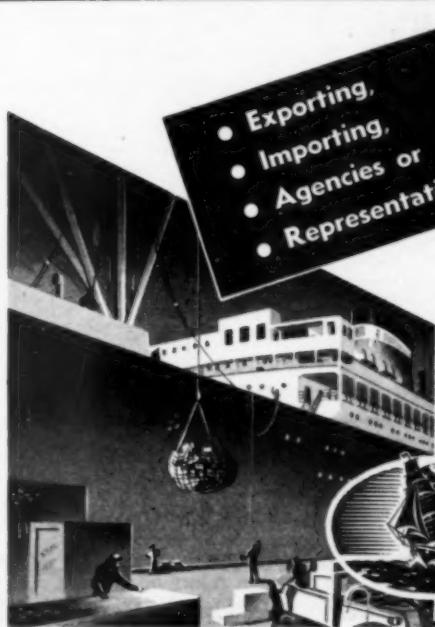


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Division of Industrial Development Services to Industry

What use has Australia made of the technical information gathered by the Allied reparations' authorities from the industries of former enemy countries? Since the end of 1946, the Division of Industrial Development, part of the Ministry of National Development, has issued more than 250,000 copies of reports, 14,000 prints from microfilms, and lent to manufacturers or placed in public and other libraries, several hundreds of other reports and catalogues. There is every indication that the service is highly valued by manufacturers and doubtless the material is having a wide influence on our industrial techniques and general skill and is speeding up the growth of our secondary industries.

A RECENT article in "The Australasian Manufacturer" described the way in which this reparations' information is gathered in Germany, sent to Britain and then sorted, assessed, and put into circulation by the Technical Information and Documents Unit of the United Kingdom Board of Trade. The Commonwealth Division of Industrial Development is the agent for the T.I.D.U., and a section of the Division does a similar job in Australia.

The Technology and Management Branch of the Division uses four main channels to pass this material to manufacturers and those working in or connected with industry: (1) general report, (2) special report, (3) microfilm, and (4) catalogue service.

The general report system is termed "Technical Service to Industry." Reports received from T.I.D.U. are sorted and assessed and in many instances bound in strong paper covers. They are then directed into that section of Australian industry which can make best use of them or placed at points, such as public libraries, where they are quickly accessible. More than 2,500 different reports have so far been received and distribution of copies exceeds 250,000. Seven thousand copies of a 114-page classified index have been distributed. More recently, steps were taken to place the reports in the libraries of towns which carry decentralized industries and in the larger technical colleges.

Then there are the special reports in the B.I.O.S. Overall Series and the F.I.A.T. Series. The British Intelligence Objectives Sub-Committee and the American Field Information Agency Technical group controlled the investigation teams at work in Germany. B.I.O.S. is compiling an excellent series of reports on German industry. These are based on material gathered by both the B.I.O.S. and F.I.A.T. teams and each is prepared by a person, usually British, who is an authority on the industrial subject under review. So far Australia has received 25 out of a projected series of 50 volumes. As the Australian allocation of each report numbers forty copies, they are not issued to the public but are placed by the Division of Industrial Development at points throughout the Commonwealth, principally public libraries and the Division's offices in the various capitals. Manufacturers are informed by circular of the arrival and contents of the reports. The American F.I.A.T. Series comprises reviews of German scientific work not previously published. The Division of Industrial Development has received ten copies of each of the series of 84 volumes, the entire series. Australia has also been able to draw upon information revealed in an investigation of Japanese industry.

manufacturer for information on a certain subject. This microfilm may depict a mechanical drawing or an industrial process. When received, it can be viewed by the enquirer on an enlarger at the office of the Division in Sydney, Melbourne, Brisbane, and Adelaide. Other viewing facilities are available in the remaining capitals. If an enquirer wants a copy, he may purchase a photograph of the film for a nominal fee.

The small manufacturer finds the microfilm service most helpful, as it enables him to study processes and machine details which could be normally only obtained with much research and expense.

The microfilm section also maintains a catalogue service for the use of manufacturers and technicians, but this service covers the catalogues of countries in addition to those of Germany and Japan.

Almost every field of activity affecting secondary industry is dealt with in the material distributed or held by the Division of Industrial Development. For instance, one list of microfilm alone covers the following subjects:—

Adhesives; Agricultural Equipment; Aircraft and Engines; Bacteriology; Bearings; Building Machinery and Materials; Ceramics; Charcoal; Chemical Plant, Products, Processes; Chemistry; Civil Engineering; Coal and Coke; Compressed Air Equipment; Compressors and Blowers; Cutlery; Detergents; Docks and Harbours; Electrical Industry; Entomology; Firefighting and Rescue Equipment; Food and Drink; Foundry Plant; Fuels; Furnaces; Gases; Industrial; Gas Plant; Glass and Glasworks Plant; Gold and Silverware; Handtools; Hydraulic Gear; Internal Combustion Engines; Precision Instruments; In-

MICROFILMS HELP INDUSTRY.

The microfilm section of the Division plays an important part in the work of circulating the material among those engaged in industry. The normal procedure is for the section to obtain microfilm from the T.I.D.U. in response to a request from an Australian

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dustrial Instruments; Iron and Steel; Jointing and Packings; Leather Goods; Lifting and Conveying; Machine Parts; Machine Tools; Marine Engines; Mathematics; Mechanical Engineering; Medicine and Medical Equipment; Metals—Non-Ferrous; Metallurgical Plant and Metallurgy; Minerals; Mining Plant; Oilfields; Oil and Fat Equipment; Oils and Fats; Optical Apparatus and Industrial Machinery; Ore Treatment; Paints; Paper and Pulp; Pharmaceuticals; Photographic; Physics; Plastic Goods and Protective Coatings; Public Utilities; Pumps; Railway Equipment and Transport; Refrigeration Plant; Resins; Rubber; Sewage Plant; Sewing Machines; Ship Building; Small Tools and Gauges; Steam Plant; Structural Engineering; Surface Coatings; Surveying; Syn-

thetic Materials; Textile Fabrics and Fibres; Woodworking Machinery.

Many manufacturers who have drawn upon the services of the various sections of the Division's Technology and Management Branch have expressed their satisfaction. The Division has made contact with some ten thousand firms. About 3,500 of these have discussed their needs with officers of the Division. More than one thousand firms have used the microfilm service.

SERVICE TO MANUFACTURERS.

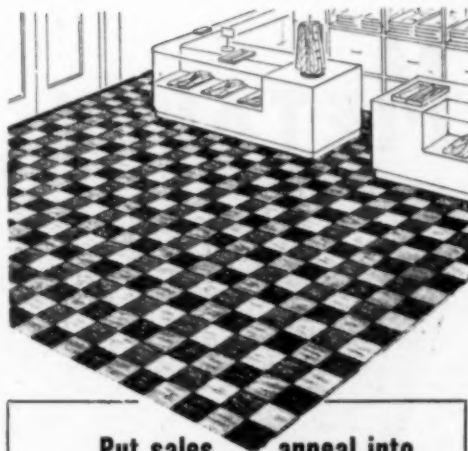
One engineering establishment engaged in the manufacture of a large piece of machinery of a type vital to this country, has reported that a complete set of drawings received from the Division has sheared three years off the planned production time.

Latch needles are an important item in the making of textile machines, but although the textile industry is growing rapidly the manufacture of these needles in Australia was not undertaken until recently. The manufacturer obtained a complete set of photostats from the Division for the making of the needles.

A firm of machine tool makers noted for products of precision and quality wished to engage in the manufacture of multipurpose milling machines of a kind not made in Australia and for which there was a strong demand. A complete set of photostat drawings was supplied in the service and machines made

from these drawings are now in use and figure in the firm's catalogues.

Photostat drawings of index automatic machines have saved private and government engineering works many hundreds of hours of time. Previously when no spare parts or drawings were available, it was necessary to dismantle a machine which had broken down and then to use the broken part as a pattern for the making of a new part. This was tedious and often meant the standing down of a machine for a week or more. Now, however, the various works using these machines can make spare parts from the drawings supplied in the service and can have the parts on hand when a break comes. In-



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dex automatic machines contain many thousands of parts and are fully automatic, being used for the multiple production of items such as screws and nuts and bolts. The use of photostat drawings has reduced loss of time through breakage from 36 per cent. to 2 per cent. in several works.

A firm making carpets in Australia was dissatisfied with the abrasive type of wear-testing machine and asked the Division if the German data contained details of a machine which would provide a test that more closely resembled normal service conditions. There was nothing in the German information, but the Division obtained specifications of a suitable machine from a British research organisation. The abrasive machines provide a rubbing action on the carpet, but the British machine tests carpets with an action which resembles the wear of human shoe-shod feet. The machine, the first of its kind in the country, is now in use and carpet manufacturers say that it has raised the standard of wearing quality to the equal of that of overseas carpets.

Because of missing parts, a tyre retreading machine was idle in Brisbane for a long time. The owners found specifications of the machine among the German data; the parts were made, and it is now in use.

Electrical fuses of many kinds based on German standards are now being manufactured in Australia and are on the market.

A manufacturer has informed the Division that his firm has derived considerable benefit from information supplied about the making of refrigerators and air compressors and giving specifications for steel for use in the compressors.

A German process has enabled a firm to bleach trochus shell and improve its methods of polishing mother-of-pearl.

An air absorption vessel of a type new to this country and based on drawings supplied in the service, is being made by a long-established firm. The vessel, a container for oxygen and other gases, is considered to be a great improvement on the design of the vessel previously used.

An electrical-cable manufacturing firm derived its technique for sheathing cables in aluminium from photostat drawings supplied in the service.

A group manufacturing adhesives obtained formulae for cold water glues; an engineering company took drawings of automatic chucking machines for food production; yet another is using information about the building of hydraulic units for machine tools; a stove manufacturer obtained drawings of German wood, oil, electric, and coke stoves; the Queensland State Department of Secondary Industries was given drawings for a centrifuge machine which removes starch from various products (the starch production capacity of Australia is relatively low); a poultry association obtained details of an alkali accu-

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mulator for use in the processing of egg pulp.

In the files of the Division are many other instances in which manufacturers have made considerable use of the service.

As was stated earlier, the Division is the agent in Australia for the Technical Information and Documents Unit, a section of the United Kingdom Board of Trade, and the correlating and distributing organization for this material. The T.I.D.U. does not desire to communicate direct with manufacturers established in Australia, but suggests that anyone who wishes to take advantage of its services should refer to the Commonwealth Division of Industrial Development. The Division, a part of the Ministry of National Development, has its Sydney office at Phillip House, 119 Phillip Street, and its headquarters at Wentworth House, 203 Collins Street, Melbourne. The Division has an office or a representative in the capital of each of the other States.

Overseas Trade Developments

(Continued from page 63.)

such as they had under Churchill, during World War 2, and to which they responded so magnificently.

Other countries that I visited on the Continent were France, Belgium and Denmark, where industrial conditions and relationships were shaping similarly to those in England; but the people of those countries were enjoying better living conditions, especially with respect to food, and it was rather humiliating to me to hear them speaking sympathetically of "the poor Britisher".

The return trip was made by ship, and provided further, if but temporary, interesting glimpses of the East—and its problems. I return home with the firm conviction that Australia is a country with a potentially wonderful future, but only if all Australians give of their utmost in its development, and that we must endeavour to intelligently understand and co-operate in world affairs. Any isolation we once had has gone.

ZINC OUTPUT.

The annual report of Electrolytic Zinc Co. of Aust. Ltd. states that the Company sold about 52 per cent. of its zinc output for the year to June 30 for use in Australia.

It was expected that the Australian consumption of zinc would increase as local steel production rose and new manufacturing plants were completed.

The surplus was exported chiefly to the United Kingdom, where it was needed to replace purchases from hard currency areas.

About 5,000 tons was sold in India, following a suggestion from the Commonwealth Government.

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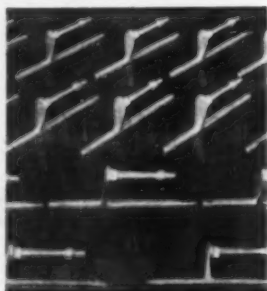
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Overseas Trade Developments

(By George T. Atkinson, Sales Director and General Manager, A. G. Healing Ltd.)

My recent overseas trip was planned as a personal visit to manufacturers operating in the various industries in which my Company is interested, both in England and on the Continent. Our association with several of these manufacturers dates back close on fifty years. It was also planned to provide a survey of the conditions, and probable future developments, in those industries, and their extension to Australia.

The industries concerned covered automotive spare parts, tools and garage service equipment, bicycles, metal finishing, radio and television, home appliances, including the "Thor" washing machine, and, finally, refrigeration.

ON the journey across by air I stepped off in Singapore, Ceylon, and India, then on to Italy, where I spent a few days at the Milan Fair. The Fair ran for approximately one month, and was kept open from 8.30 a.m. until 10 p.m. seven days a week.

The extent of Italian production to-day, covering as it does all fields

British Industries Fair being held at Olympia, London, and Castle-Bromwich, Birmingham. These two Exhibitions proved even more interesting, and were much larger in their extent, and more specific with respect to the industries covered than the Milan Fair. There were several interesting appliances being shown there for the first time, and my Company will be introducing certain of these to the trade in due course.

The "Thor" Clothes and Dish Washing Machine aroused considerable interest at the British Industries Fair, especially the cut-away sectional models and the new "Thor" AutoMagic stainless steel sink unit, incorporating both of these machines. Thor Appliances, England, are now exporting to some sixty-nine countries from the United Kingdom, but Australia ranks as Number 1 in their export field. I was particularly interested later to see the actual manufacture of these machines, and to attend some of the Service Schools, held for the benefit of "Thor" Dealers, and their Salesmen.

Australians are always well received, for the loyalty of Australia to the Mother Country is deeply appreciated and the innumerable tangible gifts of goodwill in the form of food parcels sent by our people, especially in the more difficult days, will always be remembered.

My own investigations and discussions with various manufacturers were more specific and direct, but like others who have preceded me, I came away with the firm conviction that our Radio Programmes in Australia are far more interesting to the listening public, and that the actual Receivers as manufactured by our leading Radio Manufacturers compare very favourably, both in appearance and performance.

Incidentally, English manufacturers appear to concentrate on a much more limited range of models than their Australian counterparts.



MR. GEORGE T. ATKINSON,
General Manager, A. G. Healing
Ltd.

of industry, including Radio and Domestic Appliances, came as rather a surprise to me. The use of colour and the methods of presentation, incorporating the natural artistry of these people, serve as an interesting illustration of the determined efforts being made by Continental Manufacturers to seek export markets.

On arriving in England some days later, I naturally attended the



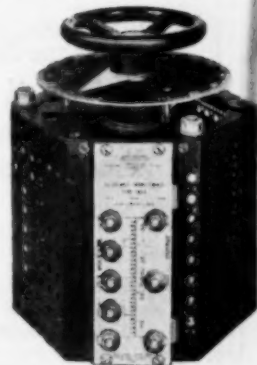
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They are all, to a major or minor degree, engaged in defence projects to-day.

Television was of great interest to me and, in an endeavour to catch something of the background of the industry, I first visited Alexandra Palace, London, in order to see the various phases of production—from the actual manufacture of stage props to the innumerable rehearsals, and the direction and control by the producer—under somewhat similar conditions to Hollywood although on a smaller scale. On my enquiring as to the cost of these rehearsals, I was informed that, while it was high, it was far below that of film production costs.

I saw, also, the equipment used for transmission to the public, and the equipment for checking the manner in which it is being televised to the public and, at a later date, something of the actual manufacture of Television Receivers, and the important Cathode Tubes. I saw the modern installation at Sutton Coldfield, with its remarkable 750 ft. mast. It is situated about eight miles north-east of Birmingham, where the Alexandra Palace programmes are relayed with the assistance of the P.M.G. to Birmingham, and subsequently televised to an increasingly important Midlands market. Finally, I saw Television as it is received in the home.

Despite the natural conservatism of the English people, Television is forging ahead in that country. By 1954 it is claimed that additional Televising establishments being installed near Manchester, in Scotland, and in the Bristol Channel areas, will enable over 80% of the

population of the United Kingdom to enjoy Television if desired. The actual production of Television sets from January to April of this year was 166,000—an increase of 118,000 or nearly 250%. An interesting indication of its increasing popularity.

Television is particularly suitable for important sporting and public events. I enjoyed seeing something of the Test Matches between the Englishmen and the West Indians, Wimbledon Tennis, the Ascot Races, and the Trooping of the Colours in which, it might be said, all of the public enjoyed a front seat view, and which otherwise few could ordinarily hope to obtain.

In the process of establishing itself, it is only to be expected that Television will run counter to the interests of influential sporting bodies, as well as those industries engaged in public entertainment, but in a typically English spirit of compromise, the possibility of arriving at an equitable arrangement, at least with respect to the Televising of important sporting events, seems to be well advanced.

It has now been arranged to try Television for six months, to watch the reactions of the public, especially from the point of view of the attendance at such important sporting events, and to develop a formula from those observations.

It is easy to start a discussion on the merits or otherwise of Television at any time, such aspects as the upsets to children's lives, from the point of view of hours of rest and school studies, the effect of Television on the eyes of the regular Television fan, and so on. However, Television represents pro-

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gress, and it is generally accepted that present problems peculiar to it will be satisfactorily ironed out.

The United States appear to be well ahead in the matter of Television research, but the BBC have now established their research headquarters at Kingswood Warren, and a considerable amount of money is being spent there with respect to further developments. At the time of my visit, experiments were being carried out by the BBC, and individual manufacturers, with respect to Colour Television, and it seems reasonable to assume that this will be one of the next developments achieved.

Partly by reason of climatic conditions, Domestic Refrigerators are rather the exception in the English home, although at the time of my visit, their exports of this equipment were considerable. In recent weeks, reports have been received indicating that by reason of the new defence programme, and consequent diversion of steel to war production, Refrigeration manufacture has been curtailed.

The advantages of owning a Refrigerator are now being more fully appreciated by the English housewife, and there will be an increasingly important home-market as time goes on. The capacities of the refrigerators exhibited at the British Industries Fair ranged from 1.5 cubic foot upwards, the performance and general appearance were excellent, while their home prices, plus purchase tax, appeared to approximate those applying in our own country.

The Automotive Export Trade in England is, of course, booming, the production of Cars, Commercial Vehicles and Agricultural Tractors having reached new records. I saw something of this production, and in the machines and methods used, quickly learned to appreciate British creative ability.

In this export drive the home-market is suffering severely, and several manufacturers and fleet-owners in other lines of business, whom I visited, have been waiting on new cars and commercial vehicles up to three or four years without any immediate prospect of delivery.

There are, at present, approximately three million motor vehicles on the road in the United Kingdom, and consequently quite a large number of Garages and Service Stations. While a number of these are attractively laid out and well equipped, the majority, in my opinion, were rather drab in appearance by Australian standards. The standard of service rendered however, is consistently good.

As might be expected and despite the revised price of 2/0½d. per gallon for petrol, the increase in the



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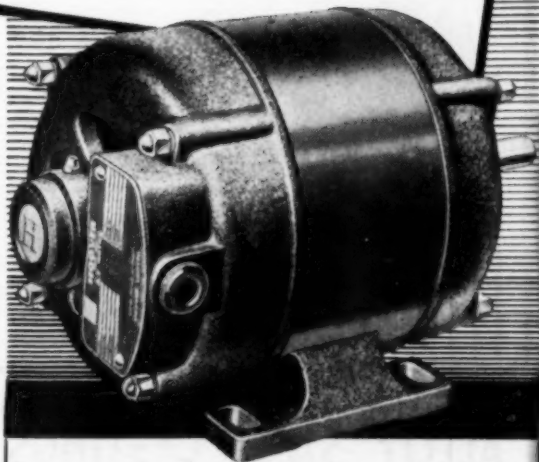
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number of vehicles on the road when petrol rationing was abolished in May, was very noticeable. Traffic, prior to rationing, had been heavy enough, but with the lifting of restrictions, soon became very congested. The worst example I experienced of this congestion per-

sonally, was between Preston and Blackpool one summer holiday, the vehicles were jammed close together for approximately eighteen miles, and travelling about three miles per hour.

Apart from London, where traffic is naturally very heavy, I found Bir-

mingham the most difficult. Birmingham is a very important industrial centre, in which practically all of the streets are worked on one-way traffic. Parking, too, is an acute problem, especially in city areas. Garaging is difficult to obtain, and is charged for on

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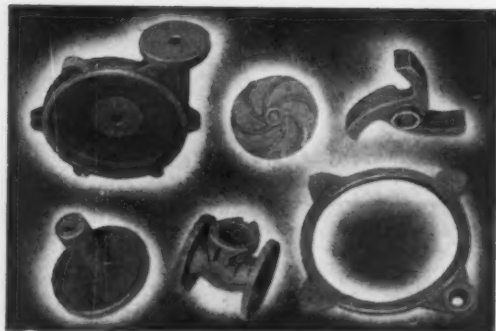
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the basis of the period of stay, and at a horse-power rating of 14 h.p. or over. My Ford Pilot averaged 3/6 per night for garaging.

Vehicles are driven on the left-hand side of the road, right-hand turns are made on the centre. The general standard of road courtesy is very high indeed. The drivers of buses and other heavy vehicles of which there are a considerable number, invariably keep well over to the side of the road, and call on overtaking traffic. Road signals are invariably given by all drivers, and one soon gains a feeling of complete confidence, even when driving in the heaviest of traffic. Driving in Melbourne since my return, I must admit, has been rather an experience, and in the comparison of the two countries, I cannot help but feel concerned at the lack of road courtesy in our country, bringing as it does a greater risk of accidents.

The surfaces of the roads in England are exceptionally good, but as a number of them are very narrow and winding the speeding of traffic is greatly restricted. The average motorist considers that he is doing quite well to average 30 to 35 miles per hour on a long run.

These roads are clearly marked for direction, and splendidly patrolled daily, by Motorcycle Service Patrols of the A.A. (Automobile Association) and R.A.C. (Royal Auto Club). Roads are numbered for easy identification and prefixed by the symbol "A" for main roads, "B" for secondary roads. So in proceeding from London to Edinburgh, a distance of almost 400 miles, it is only necessary to closely follow the "A-1" road indicators.

The Patrols to which I have referred operate in all weathers, and as might be expected, certain times of the year their job is an unenviable one. Both the A.A. and R.A.C. maintain approximately 1,000 Patrol boxes on the various major roads. The appearance of these boxes is similar to a Sentry box coloured Yellow and Black, in the case of the former, Blue and White in the latter. Membership of one or other of these organizations entitles the motorist to a key to such Patrol boxes, and from them he can phone and request a Patrol in the event of a breakdown.

While I did not use my car on the Continent, I took careful note of all that went on, and travelled in various Continental Motor Vehicles. The baby Fiat and Renault gave an impressive performance, doubly so to me as they are driven on the right-hand side of the road, the driver apparently relying more on the use of the horn than their brakes. This was in marked contrast to English conditions where the sound of the motor horn is seldom heard, excepting in an emergency.

Naturally I made enquiry concerning Garage Equipment and Motor Spare Parts, and in general terms I would say that the range, quality and price of Motor Spare Parts and Equipment as produced

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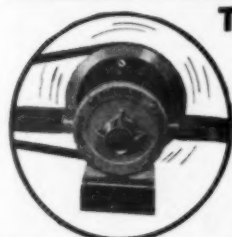
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by reputable Australian manufacturers, compares very favourably indeed in comparison with those of the overseas manufacturer.

Another interesting aspect on the matter of Spare Parts is that English manufacturers do not attempt to cover a large range of models as has been found necessary by Australian manufacturers, this, of course, places them in an advantageous position from the point of view of export to those numerous countries drawing their supplies from the United Kingdom to-day.

In marked contrast to Australia, there are in the United Kingdom, a large number of small factors or wholesalers supplying the garage and allied trades, but the services which they provide are not comparable with those normal trade services, and general activities of the wholesaler in Australia.

As to personal experiences and observations, I was fortunate enough whilst in London to attend, amongst various other functions, the dinner arranged by the Australia Club in honour of our Prime Minister, Mr. R. G. Menzies, with the Earl of Gowrie, former Governor-General of Australia, in the Chair.

This dinner was attended by many leading Parliamentarians, including Messrs. Attlee and Churchill, Defence, Finance and Industrial notabilities. It was a memorable occasion, and certainly our "Bob's" Night.

He rose magnificently to the occasion. As an Australian I felt very proud of him, the realistic survey of World conditions which he presented, and the ability in which he presented his case.

The Press publicity given to his views, and expressed on such occasions as the one cited, and to his activities generally whilst on his recent World tour, were, in my opinion, rather remarkable. He is certainly held in high regard and respect overseas, and especially in the Mother Country.

During my stay in England I learned to appreciate and admire a great deal, not only the country

itself, but also the qualities of the English people.

In industry, their creative ability with respect to the development of ingenious equipment for the handling of laborious or difficult operations is undoubted; but unfortunately to-day they are shackled and restricted by the heavy hand of Government which, while seeking maximum exports on the one hand, gives no leadership or encouragement to those concerned, and additionally lays on them a heavy burden of direct and indirect taxation.

New buildings for normal expansion are practically impossible, likewise permits for alterations to existing premises, some of which still show signs of war damage.

Workers, too, are becoming restless, uncertain as to where they are heading, and there is a growing tendency to do less while claiming the maximum pay.

This attitude of mind, I believe, has been accentuated by World conditions, insecurity as to the future, talk of further war—now backed by a rearmament programme—and a lack of clear and frank leadership.

The wonderful progress towards financial recovery that England has made in the past two years speaks volume for the solidity and determination of the English character in the face of all these difficulties.

In the course of conversation with some other Australian visitors, I have found them very critical of industrial conditions, and pessimistic as to the future of our kinsfolk in England. I would offer the personal opinion that the heart still beats strongly, and that despite those inevitable further demands and sacrifices that will be required of them as the result of the new defence programme, they will be found strong and resolute in any emergency. I have already referred to the lack of leadership; that is their greatest need at the present time—competent and inspirational leadership, a leadership

(Turn to page 57.)

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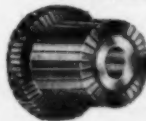
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Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

PATENT SPECIFICATIONS ACCEPTED

CAMERA LENS UNIT. 138,149.—A. J. Timoney.

Claim 1. A camera lens system comprising, in combination, a composite lens, a positive cross cylindrical lens positioned behind said composite lens, a standard lens unit positioned behind said positive cross cylindrical lens, and a negative cross cylindrical lens positioned behind said standard lens unit, said composite lens consisting of a pair of negative cylindrical lenses having their axes

at right angles to each other, and a prism interposed between said lenses.

ABSORPTION REFRIGERATOR. 138,145.—C. L. Moos.

Claim 1. Improvements in absorption type refrigerating apparatus having means including a heater tube, a boiler, a rectifier, condensing means, evaporator, absorber, strong liquor receiver, liquid heat exchanger and gas heat exchanger, characterised in that the boiler has a primary portion and a secondary portion disposed in such manner that heat is applied to the secondary boiler and is imparted to the primary boiler, said primary boiler being connected by a capillary tube to a riser which extends from the said

secondary boiler to the said rectifier.

FIRE EXTINGUISHING APPLI- ANCE.

137,990.—Fire Fighting Equipment Pty. Ltd.

Claim 1. In turn-over fire extinguishing appliances of the type described the provision of a cap having a pedestal thereon, said pedestal having a seat and a lug projecting upwardly from the seat; a member pivoted to said pedestal lug and projecting over and adjustably secured to said seat a bellcrank hand lever pivoted to the projecting part of said member having a pair of links pivoted to the work end and to a valve spindle which is actuated

said bell-crank lever characterised in that when the valve is closed the bell-crank hand lever constitutes a valve lock.

BLIND APPROACH AND LAND- ING SYSTEM.

137,989.—Pye Ltd.

Claim 1. A blind approach and landing radio system of the type referred to, in which the phase difference between the modulation received on either side of the course line is made to have some value less than 180 degrees, so that the signal received on the course line is modulated in quadrature with the reference phase.

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and failure of the modulator in the transmitter may therefore be detected in the aircraft.

NEW TYPE EMULSIFIER.

137,988.—L. Powell.

Claim 1. An emulsifier comprising a container with one end open and perforations adjacent the closed end, within which container is located mixing mechanism driven by a shaft rotatable in a bearing in the closed end of the container, the shaft extending from and adapted to be driven by a driving unit mounted upon a framework connected to the container by a further open framework surrounding the shaft.

Claim 9. The improved method of emulsifying wet mixtures comprising the immersion of a container having one end open and perforations adjacent the closed end in a bulk mixture of substances to be emulsified, drawing a continuous stream of the mixture into the container by a rotating propeller, subjecting the stream of mixture to centrifugal action and impact within the container by a plurality of successive rotating perforated discs, dividing the stream into a plurality of

streams of decreasing volume in passage through the perforated discs and directing the streams back to the bulk mixture.

GASKET FOR PLATE-LIKE MEMBERS

137,991.—Cherry-Burrell Corp.

Claim 1. A seal of the type referred to, characterized by a base portion, a top portion having a lower surface extending laterally beyond the base portion, and a crown portion superimposed on said top portion.

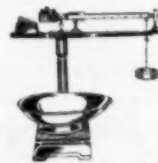
Claim 4. A seal according to any of the preceding Claims, for sealing a space between two juxtaposed relatively flat surfaces, characterized by a groove in the overface of one of said juxtaposed flat surfaces intermediate said juxtaposed surfaces, resilient and readily compressible gasket material provided with a base portion having the same cross-section as said groove and seated in said groove, said gasket being provided with a top portion overlapping said base portion on both sides thereof and compressively engaging the underlying surface portions of said juxtaposed relatively flat surface, and a crown portion on said top portion compressively engaging a portion of the reverse face of the adjacent juxtaposed relatively flat surface.

IMPROVED POSTHOLE DIGGER.

138,154.—G. H. Jarrett.

Claim 1. An improved post-hole digger in which ratchet means are provided between the operating handle and the boring head.

Claim 2. An improved post-hole digger characterised by a toothed member carried by the operating handle shaft, a complementary toothed member carried by the boring head shaft, one of said toothed members being movable axially with respect to the other and both being so shaped that they will engage during the working stroke of the handle but



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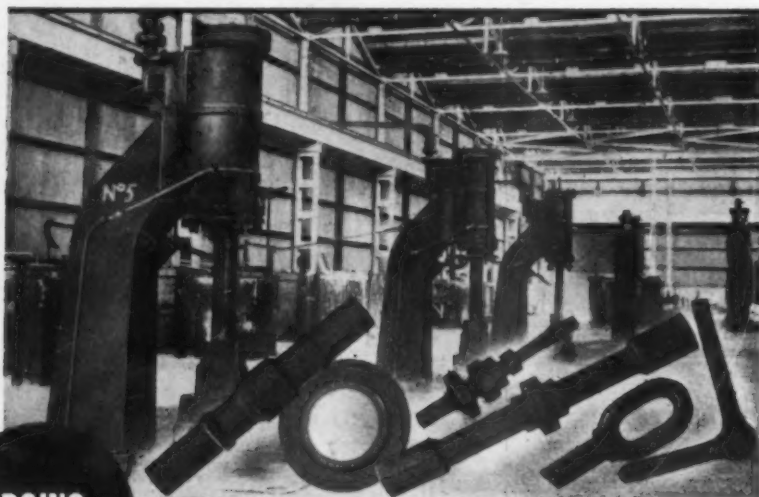
may disengage when the handle is rotated in the opposite direction.

SUGAR CANE HARVESTER AND LOADER.

138,151.—G. F. Cotton.

Claim 1. A sugar cane harvester and loader comprising a framework mounted on wheels and having draft provision; guiding means mounted at the front and to one side of said frame-

work to direct the cane in an upright position and carrying a series of spaced projections at its front end to separate and direct the cane inwardly a frontal platform on said framework adjacent said guiding means; directing means at the rear of said guiding means to direct the severed cane towards said frontal platform; a severing knife fitted forwardly of said directing means; rotatable means associated with



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said knife to direct the cut cane to said frontal platform; an endless conveyor mounted on said framework leading from said frontal platform to an elevated point of discharge; grab means mounted on said conveyor to receive the cut cane and appropriately discharge same; a topping knife device formed to top the cane carried along by said conveyor; and drive means for operating said topping knife, the rotatable means, and the said conveyor.

**IMPROVED MECHANISM FOR
BALE WIRING.**

138,160.—J. S. Chisholm.

Claim 1. Improved mechanism for automatically pressing material (as straw, silage, hay or the like) into bale formations and for automatically securely binding or fastening each pressed bale formations with metallic binding material (as wire) ends or meeting portions of which latter being secured by being welded together by automatically operated electrical spot-welding apparatus which forms part of the said improved mechanism.

IMPROVED JET SPRINKLER.
137,899.—J. L. Weidenhofer.

Claim 1. An improved sprinkler or spray comprising, a jet, a wheel having a roughened periphery, and means to support the wheel adjacent said jet so that water issuing from said jet strikes the periphery of the wheel to rotate same.

(Turn to page 67.)

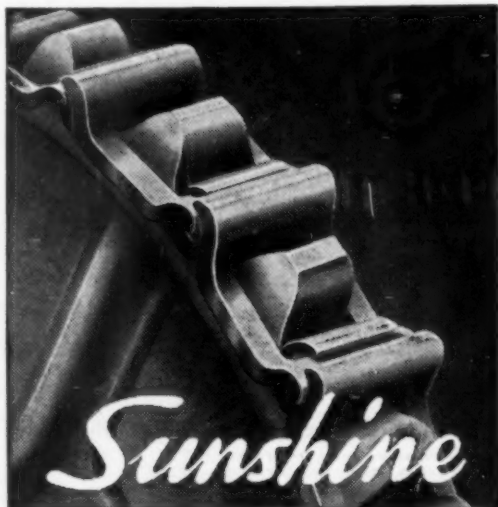
TENDERS FOR PATENTS

NOTICE is hereby given that the proprietors of Australian Patent No. 125,283, dated October 19, 1943, for "Improvements in Means for Supporting Trousers and Such Like", are prepared, under the provisions of The Patents Act, 1903-1946, to satisfy any demand and all requirements of the public respecting the said invention.

Full particulars from
P. M. NEWTON & SON, Patent Attorneys, 405-7 Collins Street, Melbourne.

"METHOD FOR MAKING CARTRIDGE ASSEMBLIES." Commonwealth Patent No. 120,280/43. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested. Address inquiries to
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STANLEY ISIAH HITCHCOCK, the proprietor of Australian Patent No. 117,915, for "Improvements in or relating to Permanent Magnet Electric Motors", invites enquiries from persons interested in manufacturing or using the patented invention in Australia under licence or other arrangement. Address enquiries to
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CRATE CONSISTING OF METAL BARS.

138,176—J. Manning.

Claim 1. A crate made of two rectangular frames of metal bars constituting top and bottom rails; corner posts made of metal slats having tongues on the top

and bottom wrapped around said rails and supporting the rails in spaced relationship a bottom made of metal slats having the ends anchored to the bottom rail; a number of flat-bend "U" metal slats passed under the bottom slats transversely having the ends

anchored to the top rail; wall bands made of metal slats; all said parts being welded together.

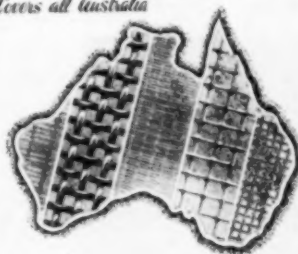
CONNECTING DEVICES OR GLANDS.

137,807.—Pyrotex Ltd.

Claim 1. A connecting device

or gland of the kind set forth wherein the open end portion of the tubular body is unthreaded for co-operation with the screw-threaded contracting device which is made of material harder than that of the said end portion so that the contracting device cuts

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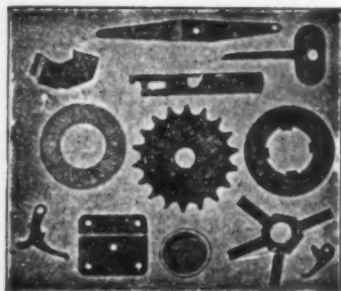
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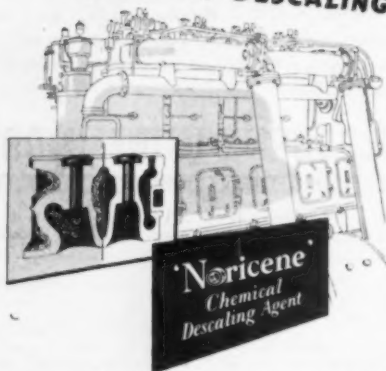
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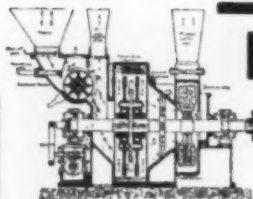
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A. R.) are more resistant than the non-acid-resisting types.

TRADE MARK APPLICATIONS

93,119. "Albatross." Articles made of leather comprising overnight bags, handbags, etc.—Griffiths Brothers Limited, 26-30 Flinders Street, Melbourne, Vic.

94,354. "Beaubilt." All types of travel goods, overnight bags, hat-boxes, and travel bags, etc.—Boyne's Leathergoods Pty. Ltd., Wilson House, Charlotte Street, Brisbane, Qld.

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Porcelain Enamel Finishes

(Continued from page 38)

2. The enamels of the acid-resisting types (hard surface but not

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be no break in the continuity of the enamel surface structure.

The large-scale adaptation of Porcelain enamels to underground pipelines has been attempted by at least one company. Pipelines for chemical usage and resistance to corrosion above ground have proved successful as stated earlier in this paper. The burial of such coatings should not make the problem any more serious. Burns and Schuh report that a Porcelain enamel finish adapted to resist soil corrosion of both the acid and alkaline types is in good condition after ten years in soil where the life of steel pipe is $1\frac{1}{2}$ to 2 years.

Logan reports that vitreous enamels have been tried experimentally as a protection against soil corrosion and have yielded promising results, but local failures of some of the specimens of one enamel have been recorded.

Other data, as yet unpublished, on specimens exposed for fourteen years' burial showed no evidence of rust in any of the soils to which they were exposed. In four of the soils, the specimens were 'pitted', but it seemed probable that the pits formed at points where the specimens were injured.

Resistance to heat should also be considered in selecting an enamel. The resistance of all types of Porcelain enamel coatings to heat is a well-known property. Most Porcelain enamel coatings for iron or steel are fused on to the ferrous metal base at temperatures ranging from 1350° to 1690° F. They will not change or soften at temperatures below 1000° F. and will last almost indefinitely at temperatures below 1000° F.

Until World War II, there were few applications of Porcelain enamel coatings for use above 1000° F. but the shortage of critical nickel and heat-resisting alloys during the war stimulated the development of special types of coatings to resist much higher temperatures as well as sudden changes in temperature.

A classical example was the successful coating of standard, low-carbon steel with a thin ceramic material for the exhaust systems of amphibious landing craft and airplane exhaust systems. These types of ceramic enamels were developed at the United States Bureau of Standards and by the laboratories of various frit manufacturers.

Since the war, there is a considerable amount of government-sponsored research in the field of

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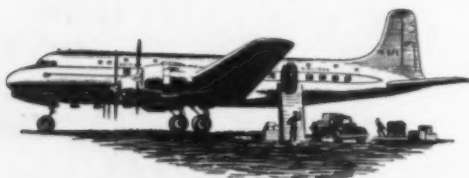
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ceramic coatings which will be resistant to much higher temperatures than heretofore encountered. These coatings are usually of a matte surface and do not resemble the conventional Porcelain enamels in appearance, but they are, nevertheless, Porcelain enamels of special composition.

The Ferro Enamel Corporation research laboratories developed a special heat-resisting coating to be applied to the electric heating elements of electric stoves. Nichrome was not available for this usage. Many thousands of units were manufactured from low-carbon steel and a thin ceramic heat-resistant coating which under test stood more than 200 hours under constant heat without scaling. The coating was also highly resistant to spalling and scaling when splashed with water or hot grease while under full electrical load.

SUMMARY.

From the above discussion it can be readily understood that Porcelain enamels for metals cannot be classified by composition, nor can broad specifications for general usage be written. Each type of performance must be considered separately and the enamel specified or developed to meet the general set of conditions involved. Such inorganic coatings are available for all types of applications and can be made exceedingly resistant to many types of corrosive forces.

The limiting factors are those of silica or silicates, in that there is no resistance to fluorides and hydro-fluoric acid or strong caustic solutions. The surface is only as good as its preparation. There must be no defects such as pinholes or bare metal spots, as there is no anodic protection such as that obtained with various metallic-type coatings.

It is not possible to overcome all problems of corrosion by merely specifying that the coatings be of the acid-resistant types. These are usually more difficult to apply and do not necessarily guarantee maximum resistance to corrosion. The design of the article to be coated must be such that it lends itself properly to coating without warpage and spontaneous damage. Reasonable care must be exercised in handling Porcelain enamelled articles to prevent damage to the coating, but considerable abuse can be tolerated without danger as long as the surface remains intact.

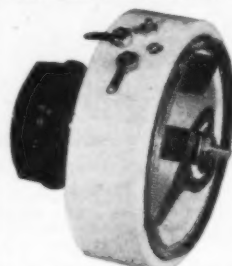
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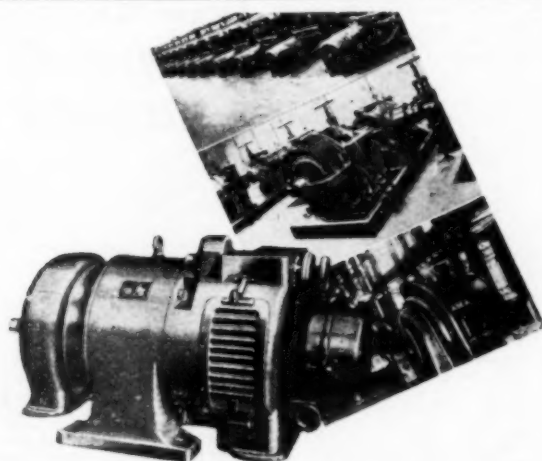
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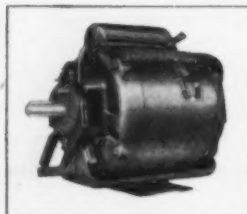
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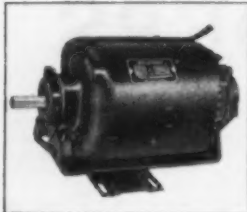
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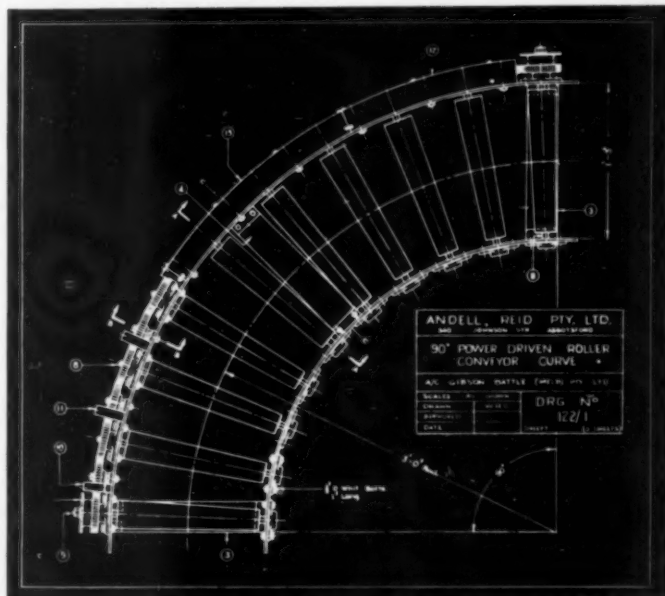
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Galvanised Iron. McAllister and
Williams, £172/17/11.

Pedestal Routing Machine.
Goodall & Co. Pty. Ltd., £295.

Utility Trucks. W. T. Coggins
Pty. Ltd., £61/27/10/-.

Pressure Greasing Unit. West-
cott, Hazell & Co. Ltd., £63/16/2.

Concrete Pipes. Monier Pipe
Co. Pty. Ltd., £33/14/-.

Hook Bolts and Straining Bars.
C. J. Haesmer Pty. Ltd.,
£183/6/8; Elecman, £1/61/17/6.

Turnbuckles. W. Kopsen & Co.
Pty. Ltd., £25/10/-.

Mobile Fencing Unit. R. J.
Moulang & Co., £275.

Rubber Belt, for Elevating
Grader. Goodyear Tyre & Rubber
Co. (Aust.) Ltd., £170/15/-.

Concrete Pipes. Rocla Pipes
Ltd., £131/14/8.

Brown Paper. Australian Paper
Mfrs. Ltd., £180/10/-.

Unbleached Calico. J. T. Dudley
Pty. Ltd., £39/15/10.

Concrete Pipes. Monier Pipe
Co. Pty. Ltd., £97/1/4.

Concrete Pipes. Humes Ltd.,
£98/19/4.

Mastic Jointing. Perry & Son,
£64/3/4.

Concrete Pipes. Humes Ltd.,
£831/13/4; Monier Pipe Co. Pty.
Ltd., £120/6/8, £74.

Short Link Chain. W. Kopsen
& Co. Pty. Ltd., £45/8/-.

Canvas Blind. E. H. Brett &
Sons Pty. Ltd., £30/17/6.

Concrete Pipes. Humes Ltd.,
£475.

Zinc Sheets. Wright & Co.,
£61/3/3.

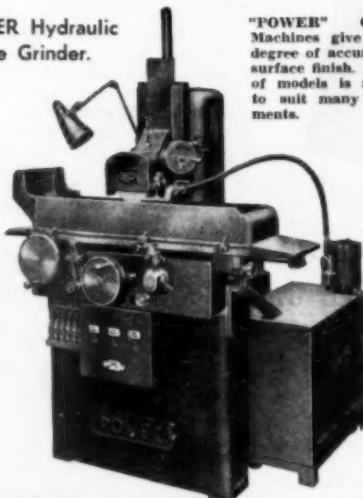
Electric Equipment. B.G.E. Co.
Pty. Ltd., £13/10/-; Johnson &
Phillips Ltd., £13/16/3; H. Rowe
& Co. Pty. Ltd., £4/17/8; Noyes
Bros. (Sydney) Ltd., £7 Warbur-
ton, Frankl Ltd., £11/18/2.

Electrical Fittings. B.G.E. Pty.
Ltd., £10/18/2; A. G. Broue Ltd.,
£14/15/8; Johnston & Phillips
Ltd., £5/13/6; Noyes Bros.,
£2/16/3; Siemens (Aust.) Pty.

PRECISION GRINDING MACHINES

Made in Australia

POWER Hydraulic
Surface Grinder.



"POWER" Grinding Machines give a high degree of accuracy and surface finish. A range of models is available to suit many requirements.

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Phones: FJ 6227, FJ 4486.

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damage occurs!

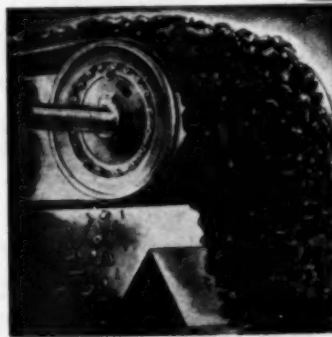
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used.

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Required—No Fire
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Victoria: M. A. Stanger, 74 Campbell St., East Kew, E.A. Tel: WY 1543.
South Australia: Pascoe & Co. Ltd., 282 Port Rd., Woodville. Tel: M 717.
West Australia: Allan Watson, 35 Barrock St., Perth. Tel: 8 2594.

Ltd., £2/9/6; William Adams & Co. Ltd., £5/4/-.

Double Gully Gratings and Frame. Mascot Engineering Co., £48.

Double Gully Grating and Frame. Mascot Engineering Co., £8.

Asbestos Cement Moulds. James Hardie & Co. Pty. Ltd., £78/12/-.

Jackhammer Parts. Whyte-Hall British Products Pty. Ltd., £16/10/4; McPhersons Ltd., £11/10/9.

Valves and Bodies, for Lister Engines. Pyrox Ltd., £67/4/-.

Concrete Pipes. Monier Pipe Co. Pty. Ltd., £62/6/7.

GOVERNMENT RAILWAYS DEPARTMENT.

Steam Turbine Driven Boiler Feed Pumps (three), Spare Parts, and 3 Pressure Regulated Automatic Quick Starting Devices (Spec. No. 1254), for Lake Macquarie Power Station. Ferrier-Dickinson & Weir-Drysdale Ltd., £18.162.

Motor Driven Boiler Feed Pumps, etc. (six), Spare Parts, and Erection (Spec. No. 1254), for Lake Macquarie Power Station. John Carruthers & Co. Pty. Ltd., £33.122/6/-.

Vehicle Grids. Metropolitan Engineering & Ship Repair Co., £180.

Centrifugal Water Pump. Mofat-Virtus Ltd., £91/1/6.

Aluminium Powder. A. C. Harrick Pty. Ltd., £67/4/-.

Steel Plan Cabinets. Brown-bult (N.S.W.) Ltd., £63.

Steel Bar Mat. A.R.C. Engineering Co. Pty. Ltd., £717/15/7.

Concrete Vibrator. Tutt, Bryant (N.S.W.) Pty. Ltd., £175.

Bar Mat Reinforcement. A.R.C. Engineering Co. Pty. Ltd., £379/9/1.

Concrete Pipes. Humes Ltd., £9/13/4.

Concrete Pipes. Humes Ltd., £81/18/-.

Insulating Material. Bradford Insulation Pty. Ltd., £72/4/6.

Concrete Pipes. Monier Pipe Co. Pty. Ltd., £54/3/-.

Engineer's Felt. Felt and Textiles of Aust. Ltd., £75/15/4.

Marine Bonded Three Ply. Leopold Barnett Pty. Ltd., £88/10/8.

Concrete Pipes. Humes Ltd., £209/5/-.

Fuel Injectors, Nozzles and Bodies. Pyrox Ltd., £114/12/-.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Motorised 24 in. circular saw, 7 1/2 h.p. motor, £178/11/8. Wm. Thornley & Sons.

"Kwik-Mix", non-tilling model, 6P plaster and mortar mixer.

(Turn to page 77.)

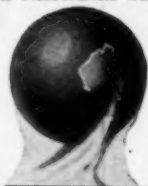
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FULLERS EARTH

For all Industries



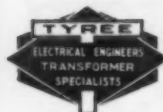
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● Whether you want motors for Sealed Unit Refrigerators — Dish or Clothes Washing Machines — Machine Tools — Circulating or Exhaust Fans or Pumps — don't waste time and money adapting conventionally-designed motors to suit your own special application — Tyree can supply just the motor you want ready to bolt into position. Comprehensive range up to $\frac{3}{4}$ h.p. single phase and three phase including capacitor start types.

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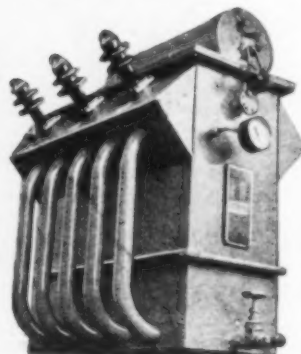
Tenders submitted for transformers of $2\frac{1}{2}$ to 500 kVA — Single and Three phase — for operation at any required voltages up to 33 kV.

All operations in the manufacture of TYREE Transformers combine to produce an article of quality and efficient performance, conforming with the relevant sections of BSS.171-1936 and C61-1946.



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'Phones: FA 3155-9

(Continued from page 75.)

£560. Armstrong - Holland Pty. Ltd.

Sewage ejector, 20 gals. per minute, Warragamba dam, £343. H. P. Gregory & Co. Pty. Ltd.

Power operated crane attachment, 2 ton, £880. H. C. Southwell.

Transformers, 500 kVA, 11,000-415 V., two, oil, Warragamba township electricity supply, £1,910. Tyree Electrical Co.

Lightweight air motor driven hydraulic or screw feed underground type diamond drills, 30, and drilling equipment, for Warragamba dam, £15,000. Mineral Drillers Pty. Ltd.

PUBLIC WORKS DEPARTMENT

Conveyor equipment, bulk wheat storage, June, sub-terminal, £2,836. J. C. Ludowici & Son Ltd.

Heat storage cooking unit, Sutherland district hospital, £516. H. T. Carmichael Ltd.

Bed-passenger lift, elec., Crookwell district hospital, £4,677. White Elevators Pty. Ltd.

SYDNEY COUNTY COUNCIL.

Forged steel balls for pulverising mills, £5,909. Commonwealth Steel Co. Ltd.

Reblocking and finning Bailey walls, in boilers Nos. 19-22, Bunnerong power station, £24,930. J. R. Pillars Pty. Ltd.

Precision lathe and accessories, £1,466. Alfred Herbert (A'asia) Pty. Ltd.

Combined switches and fuses, 11,000 V., high rupturing capacity outdoor, £3,725. Acelec Pty. Ltd. Self-propelled motor driven front end loader, £2,859. F. J. Hodgson Pty. Ltd.

Purchase of Barber-Greene trench excavator, model 44C, £5,000. Heavy Equipment Pty. Ltd.

Structural steelwork for Blackwattle Bay ash barge docks, £10,575. Arcos Products Pty. Ltd.

Concrete pipes, £97/1/4. Monier Pipe Co. Pty. Ltd.

Concrete pipes, £98/19/4. Humes Ltd.

Mastic jointing, £64/3/4. Perry & Son.

VICTORIA

STATE ELECTRICITY COMMISSION.

Chain cutter and hollow chisel mortising mach.; tenoning and scribing mach., £1,217. Brown & Dureau Ltd.

Replacement parts, for Brown-Boveri turbo-generators. Gibson, Battle (Melb.) Pty. Ltd.

Pole derricks, mobile, 30, £20,936. Ansair Pty. Ltd.

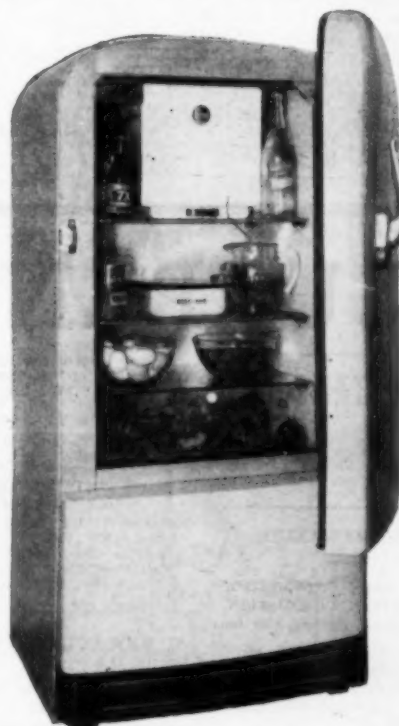
Shuttle dump waggons, 41 cu. yd., two, £6,210. Queen's Bridge Motor and Engineering Co. Pty. Ltd.

Spare parts, International tractor, £19,049. Victorian Industrial Sales & Service Pty. Ltd.

Construction winches, heavy duty, 7½ ton, four; 5-ton, two, £24,162. K. L. Distributors Pty. Ltd.

THE AUSTRALASIAN MANUFACTURER
[December 16, 1950. Page 77.]

SEALED UNIT REFRIGERATORS



MODEL S50, 7½ CUBIC FEET CAPACITY

With Modern and Exclusive CRISP CHEST and
TRIPLE TEMPERATURE REFRIGERATION

Exclusive Crisp Chest for retaining the Vitamins and Flavour of your Food. Keeps Salads crisp. Prevents drying out. Keeps Butter and Cheese at spreading constituency. Automatic Interior Lighting. Enamel Interior.

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PLAN

NEVANDER SIZE No. 1 AIR OPERATED MACHINE VICE

NEVANDER size No. 1 air-operated MACHINE VICE comprises a fixed head and a power head for securing by bolts to machine table slots, thus giving any desired jaw opening.

The power head has a 1/4-inch power stroke and develops a grip of up to about 3 ton when supplied with compressed air at 100 p.s.i. The grip may be reduced by adjustment and lowering of the air pressure.

The jaws are hardened and renewable, and they may, accordingly, be replaced with jaws of special shape, should the work so require.

To open the jaws, compressed air is applied to inlet "B," and to close the jaws the compressed air is released from "B" and applied to inlet "A"; for this purpose, hand, foot or automatic valves are available.

NEVANDER size No. 1 air-operated MACHINE VICE offers many opportunities for saving machine time, because the grip can be applied or released practically instantaneously, and, when a foot-control valve is used, both of the operator's hands are left free to manipulate the work while clamping and unclamping.

The vice takes up comparatively little space and

it is of durable construction, being unaffected by swarf or chips.

Because the power head is separated from the fixed head, NEVANDER size No. 1 air-operated MACHINE VICES may be used for a wide variety of holding operations, including positioning rams, multi-clamps, etc.

We also manufacture :

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- Air-operated work clamps.
- Air cylinders.
- General purpose diaphragms.
- Air valves.

A product of
THE POWER ELEMENT CO.
Box 7, P.O., Edgecliff, N.S.W., Australia

CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.
Rolled Steel Section, 750 tons.
Jan. 22.

DEPARTMENT OF WORKS AND HOUSING.

Electric Passenger Lifts (2), for Perth. Jan. 2.

Exhaust Ventilation Systems (2), at Airport, Moorabbin. Dec. 19.

Ice Cream Cabinet, Supply and instal, at Princess Juliana Hospital, Turrumurra (Quot. 236). Dec. 20.

Low Tension Ironclad Switchboards, for Canberra. Extended to Jan. 23.

Rubber Treads and Risers, Supply and fix, at Customs House, Sydney (Quot. 235). Dec. 20.

GOVERNMENT RAILWAYS DEPARTMENT.

Tents and Flies. Dec. 19.

POSTMASTER-GENERAL'S DEPARTMENT.

Crockery, for Food Services (Sch. C.6486). Feb. 1.
Ladders (Sch. C.6475). Jan. 16.
Pneumatic Clamping Machine (Sch. S.A.965). Jan. 12.

NEW SOUTH WALES

DEPARTMENT OF PUBLIC WORKS.

Check Valves. Dec. 20.
Clay Grinding Pan. Jan. 3.
Copper Strip. Dec. 20.
Fly-proof Screens. Dec. 20.
Launch, Diesel-driven. Jan. 10.
Steel Reinforcement Rods. Jan. 3.

DEPARTMENT OF SUPPLY.

Crockery (50,000 cups and 49,000 saucers). Dec. 19.

Grease-proof Paper, 10,000 lb. Jan. 4.

Ice Chests, Domestic Type, 1,250. Dec. 19.

Paint. Dec. 19.
Semi-Universal Hydraulic Grinding Machines. Dec. 21.

Switch Stickers. Dec. 19.

FORESTRY COMMISSION.

Berryman Loaders. Dec. 19.
Bushwalkers' Camping Outfits. Dec. 19.
Caravans, one-berth. Dec. 19.
Motor Graders. Dec. 19.
Radio Crystals. Dec. 19.
Steel Clothes' Lockers. Dec. 19.

GOVERNMENT RAILWAYS DEPARTMENT.

Goods Lifts (3) and Passenger Lifts (2), for Lake Macquarie Power Station (Spec. 1269). Jan. 24.

STATE CONTRACTS CONTROL BOARD.

Boiler Plant. Dec. 19.
Coin Counting Machines. Dec. 19.
Electric Motors. Dec. 18.
Flour Milling Plant. Dec. 19.
Milling and Grinding Machines. Dec. 19.

Motor Accessories. Dec. 20.
Stationery. Dec. 19.

SYDNEY COUNTY COUNCIL.

Induced Draught Fan Impeller and Shafts, for Bunnerong "B" Power Station (Spec. 1498). Dec. 28.
Utility Vehicle, 12-15 cwt. Dec. 20.

MISCELLANEOUS.

Boiler Feed Pumps (2), electrically driven, each of 75,000 p.p.h. cap.; Steam Turbine Boiler Feed Pump, of 100,000 p.p.h. cap., for City of Tamworth. Jan. 27.

VICTORIA

DEPARTMENT OF SUPPLY.
Protecting Covers. Dec. 21.
Refrigerators. Jan. 25.

GOVERNMENT RAILWAYS DEPARTMENT.

Cable, 2,200 volt. Jan. 31.
Extruded Brass Bars. Dec. 20.
Foot Scrapers. Dec. 20.

(Turn to page 79.)

NICHROME

RESISTANCE WIRE THE WORLD'S BEST

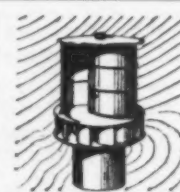
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Running smoothly and silently on Ball Bearings in Light Winds.

VENTILATION AT NO RUNNING COST "S" ROTOR VENTILATORS

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Queensland Sole Agents: E. Sachs & Co. Pty. Ltd., Valley, Brisbane.
Victorian Sole Agents: Torold Industrial Supplies, West Melbourne.

NEW TENDERS — Contd.

Traction Motor Gear Wheels and Pinions. Jan. 24.
Transformers, for Flashing Light Signal Lamps. Dec. 20.

STATE ELECTRICITY COMMISSION.

Electric Goods and Passenger Lifts, two-g geared (Spec. 50-51/208). Jan. 10.
Goods Lift, one ton (Spec. 50-51/206). Jan. 17.
Plate Girder Bridges. Extended to Jan. 3.
Service Fuses (Spec. 50-51/200). Jan. 17.
Welding Electrodes (Spec. 50-51/207). Dec. 20.

MISCELLANEOUS.

Porcelain Disc Insulators; Assorted Hardware (Tender 5005), for Snowy Mountains Hydro-Electric Authority. Jan. 9.
Transformers, three-phase (Tender 5006), for Snowy Mountains Hydro-Electric Authority. Jan. 14.

SOUTH AUSTRALIA

SUPPLY AND TENDER BOARD.

Bare Copper Wire, h.d., 100 lb., 20 miles. Dec. 18.

♦ ♦ SEE ALSO ♦ ♦
"LATE OPEN TENDERS"

Electric Hoists, 1 ton (12); 1 ton, (8). Dec. 18.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Laundry Equipment (Sch. 698A). Jan. 11.
Steel Sections (Sch. 695A). Dec. 21.
Steel Water Tanks, galv. (200 and 400 gallons), (Sch. 674A). Jan. 25.
Timber Planing Machinery (Sch. 696A). Jan. 18.
Transformers, 2,000 kVA (Sch. 688A). Feb. 1.
Vacuum Pumps, motor driven (Sch. 697A). Jan. 11.

CURRENT TENDERS

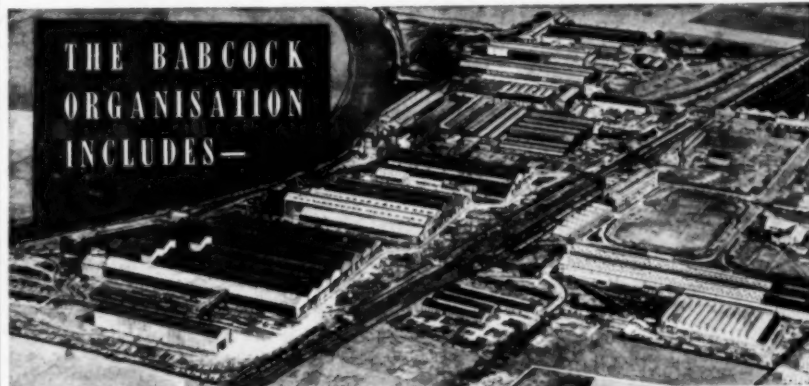
The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Attendance Books (Sch. C.-6476). Dec. 19.

(Turn to page 81.)



THE BABCOCK
ORGANISATION
INCLUDES—

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at Renfrew, Scotland—

plus

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The Largest Works
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Extensive Works—fully equipped to manufacture complete
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FOR ACCURATE

TEMPERATURE

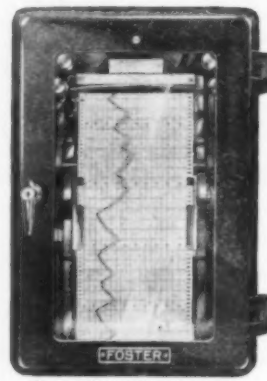
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Foster Pyrometers are unsurpassed
for their robust construction and
consistent, accurate performance.
Illustrated is the Multi-point Strip
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simultaneously and control one.
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IN SHEET, STRIP, AND CIRCLES, NAVAL BRASS
SHEETS AND SHEATHING.

LEAD — Sheet, Pipe, Dampcourse, etc. PURE TIN — Sheet and Pipe.

NON-FERROUS METAL EXTRUDED PRODUCTS
Collapsible Tubes for Dentifrices, etc.

BRASS FITTINGS FOR WATER, SEWERAGE & GAS SERVICES
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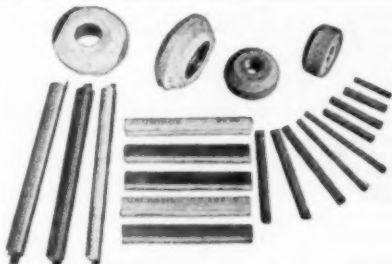
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CURRENT TENDERS - contd.

B.P.O. Standard Unselector Maintenance Parts (Sch. C.6426). Jan. 16.

Bimotional Switch Wiper Assemblies and Parts (Sch. C.6436). Dec. 19.

Cable Jointing Pits and Covers (Sch. C.6473). Dec. 19.

Coil Winding Wire (Sch. C.6531). Dec. 19.

Communication System between Sydney and Melbourne (Spec. C.8157). Extended to Jan. 18, 1951.

Moulding Powder (Sch. N.S.W. 493). Dec. 22.

Paper Towels (Sch. N.S.W. 500). Dec. 22.

Platinum Wire (Sch. N.S.W. 495). Dec. 22.

Printed Forms, "Statistical" Series (Sch. C.6477). Dec. 19.

Printed Forms, Wireless Branch Series (Sch. C.6481). Jan. 16.

Protective Apparatus (Sch. C.6462). Jan. 23.

Record Replay Equipment (Sch. C.6437). Dec. 19.

Resistors and Reactances (Sch. C.6469). Dec. 19.

Rubber Gloves (Sch. C.6474). Jan. 16.

Rust Preventive (Sch. C.6470). Jan. 18.

Spanners (Sch. C.6434). Dec. 19.

Submarine Telephone Cable (Sch. C.6468). Jan. 18.

Winches and Power Take-off (Sch. C.6471). Feb. 15.

DEPARTMENT OF CIVIL AVIATION.

Dual Diversity Communication Receivers (Sch. 318). Dec. 19.

Electric Propeller Fans. Dec. 19.

Fuses, for Radio and Radar Equipment (Sch. 310). Jan. 16.

Hand Tools, for Adjusting Telephone Equipment (Sch. 317). Jan. 16.

Headphones, for Telecommunication Equipment (Sch. 320). Jan. 23.

Master Time Clock Systems and Associated Slave Equipment. Jan. 30.

Mobile Cranes, 5-ton (Sch. 323). Dec. 19.

Switchboards, for D.M.E. Installations. Dec. 19.

Tubular Steel Masts or Component Parts, for Rhombic Aerials (Sch. 314). Extended to Jan. 16.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Cold Cutting Saw, for Aluminium Billets, and Saw Sharpener (Spec. M.32). Jan. 15.

Grinding Media, 45 tons—Forged Steel Balls (No. M.30). Dec. 18.

Fans (16), 50,000 cub. ft. per minute (Sch. M.33). Jan. 15.

Master Clock Time System, with Attendance Recorders and Wall Clocks (Spec. E.31). Dec. 18.

Mild Steel Water and Air Piping, 6 in. dia. to 1 in. dia. (Spec. M.34). Jan. 22.

Steam Driven, Direct Acting Molten Pitch Pumps (three), (No. M.31). Dec. 18.

DEPARTMENT OF WORKS AND HOUSING.

Boiling Pans (3), 30-gallon, for Capital Hill No. 2 Works Hostel, Canberra. Dec. 19.

Coal Handling Plant, for Heidelberg. Dec. 19.

Counter Type Refrigerator, for Ainslie Infants' School, Canberra. Dec. 19.

Dust Extraction Ductwork, for Heidelberg. Dec. 19.

Evaporative Cooling and Heating Plant (Spec. 351); Exhaust Hood for Kitchen (Spec. 352); Refrigeration Equipment (Spec. 353); Hot Water Systems and Steam Reticulation (Spec. 354); Exhaust Hood for Kitchen (Spec. 358);

Refrigeration Equipment (Spec. 359); Steam Equipment (Spec. 362); Steam Equipment (Spec. 364); Hot Water Systems and Steam Reticulation (Spec. 365); Evaporative Cooling and Heating Plant (Spec. 366), for Central South Australia. Jan. 9.

Furnishings: (Curtains; Blankets; Occasional Furniture; Carpet Squares; Rubber Flooring; Dining-room Furniture; Bedroom Furniture), for Students' Hostel, Forestry School, Canberra. Dec. 19.

(Turn to page 82.)



Let's get away from the usual round!

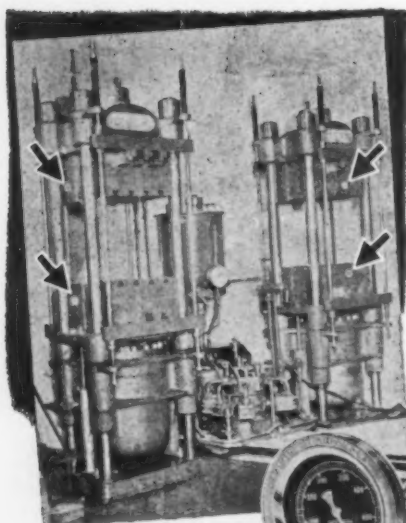
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CURRENT TENDERS — contd.

High Tension Underground Cable and Joint Boxes, for Canberra. Jan. 9.

Hot Water Service, for Portsea. Dec. 19.

Hot Water, Gas, Compressed Air and Vacuum Services at Fisherman's Bend. Dec. 19.

Indoor Ring Main Units, for Electricity Supply, Canberra. Extended to Dec. 19.

Jacket Water Cooling Equipment, for 70 K.W. Diesel Generating Sets, for Darwin. Dec. 18.

Low Tension Underground Cable and Joint Boxes, for Canberra. Jan. 9.

Outdoor High Tension Switchgear, for Electricity Supply, Canberra. Extended to Dec. 19.

Steam Tallow Extractor, Centrifugal Type, for Canberra Abattoirs. Jan. 16.

Transformers. Jan. 2.

GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Electric Locomotives, 3 ft. 6 in. Jan. 9.
Rails and Fishplates, 94 lb. Jan. 18.

STORES, SUPPLY AND TENDER BOARD.

Cotton Tape (Sch. C.T.B. 916). Dec. 18.

Firefighting Equipment (Sch. C.T.B. 929). Dec. 19.

Office Knives and Scissors (C.T.B. 932). Jan. 18.

Postage Stamp Paper (Sch. C.T.B. 927). Jan. 18.

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STATES

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GOVERNMENT RAILWAYS DEPARTMENT.

Automatic Ash Skip Hoist and Horizontal Belt Ash Conveyors (2), for Uthmaniyah Power Station (Spec. 1272). Jan. 17.

Axles, for Locomotives, Tenders and Carriages (Sch. 133). Dec. 31.

Circulating Water Screening Plant, for Lake Macquarie Power Station (Spec. 1277). Dec. 20.

Indicating and Recording Instruments, Summation and Remote Metering Protective Relays, Regulating and Rheostat Equipment, and Current Transformers, for Lake Macquarie Power Station (Spec. 1276). Extended to Jan. 10.

Oil Circuit Breakers, Indoor Type (33,000 Volt, 1,000 MVA) and Associated Equipment, for Prince Alfred Sub-station and Bondi Junction Sub-station (Spec. 1279). Feb. 14.

(Turn to page 83.)

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CURRENT TENDERS — contd.

Overhead Wiring Equipment, for the Electrification of Railways Tracks. Jan. 24.

Rolled Steel Tyres, for Locomotives, Tenders, Carriages and Waggon (Sch. 131). Dec. 31.

Sawdust, Annual Contract (Sch. 146). Dec. 31.

Truck Weighbridges, 35-ton (16), with platforms 16 ft. long by 6 ft. 6 in. wide, equipped with dial indicators and recording heads. Extended to Jan. 10.

DEPARTMENT OF MAIN ROADS.

Conveying and Screening Machinery, for Aggregate Plant at Department's Maintenance Depot, Granville. Jan. 30.

Table-Top Lorry. Dec. 19.

DEPARTMENT OF PUBLIC WORKS.

Bucky Tilt Table, Tube Stand, and Accessories, for Royal Prince Alfred Hospital, Camperdown. Feb. 12.

Electrically Driven Pumping Plant, for Walcha Water Supply. January 22.

Electrically - driven Borehole Type Pumping Plant, for Coonamble Water Supply. Jan. 15.

Electrically - driven Pumping Plant, for Dorrigo Water Supply. Jan. 29.

Electrically-driven Bore, for Mendooran Water Supply. Jan. 15.

Goods Lift, Electrically Operated, for University of Technology, Kensington. Jan. 8.

Machine Tools, for Workshop at Southern Electricity Supply, Tallawarra Power Station. Jan. 8.

Mobile X-Ray Unit and Accessories. Feb. 5.

Mobile X-Ray Unit and Accessories, for Narrandera District Hospital. Feb. 5.

Pumping Plant—Bore Hole Type, Electrically Driven, for Mendooran Water Supply. Jan. 15.

Steel—Angles and Flats, approx. 9 tons. Dec. 20.

Thermometer Pockets. Dec. 20.

Three-Wheel Type Tractors. Dec. 20.

Water Softener. Jan. 2.

DEPARTMENT OF SUPPLY.

Equipment Containers. Dec. 21.

High Speed Tapping and Threading Machines. Dec. 21.

MARITIME SERVICES BOARD.

Marine Type, Multitubular Boiler, approx. 16 ft. dia. x 16 ft. long (Con. 50/53). Jan. 2.

Structural Steelwork, totalling 385.5 tons, for Shed at Fyrmont (Con. 50/42). Jan. 8.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Concrete Skips, Bottom Discharge (30), 20 cub. ft. cap. (P.T. 387). Jan. 9.

(Turn to page 84.)

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CURRENT TENDERS — contd.

Ropeway Loading Bins (2), and Supporting Steelwork, at McCann's Island (Job 2460). Dec. 19.

Concrete Buckets (6) of rated capacity at least 4 cub. yds. (P.T. 392). March 6.

Road Tractor Unit, Two-Axle, powered by Compression Ignition

Engine capable of developing 100 B.H.P. (P.T. 388). Dec. 19.

Road Tractor Units, Three-Axle (two), powered by Compression Ignition Engine, capable of developing 120 B.H.P. (P.T. 389). Dec. 19.

Steel Silo, 820 tons cap., at Waragamba Dam (Job 2453). Dec. 19.

SYDNEY COUNTY COUNCIL.

Circuit Breaker Switching Equipment, low voltage, air or oil (Spec. 1456). Jan. 18.

Metalclad Neutral Switching Equipments, 20,000 volt., for Homebush Sub-station (Spec. 1486). Jan. 18.

Miscellaneous Piping, for Turbo Alternators at Pyrmont "B"

Power Station (Spec. 1468). Extended to Jan. 18.

Overhead Transmission Line (132,000 Volt.), Lugarno to Homebush (Spec. 1493). March 15.

Supervisory Control Equipments, for City North Sub-station and City Sub-station (Spec. 1457). Jan. 18.

(Turn to page 85.)

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CURRENT TENDERS — contd.

MISCELLANEOUS.

Metal-Clad Switchgear, 11,000-
volt, and L. T., for Clarence Ri-
ver County Council (Spec. 95/50).
Dec. 20.

Outdoor Transformers, up to
and including 1,500 KVA cap., for
Newcastle City Council Jan. 22.

Power Grader, medium weight
(14,000 lb. to 16,000 lb., for Shire
of Correen. Dec. 21.

Pumping Plant, deep-well type,
electrically-driven, for Cooma Wa-
ter Supply Augmentation (Spec.
120-49/50). Dec. 18.

Pumping Plant, electrically-
driven Bore Hole Type, for Men-
dooran Water Supply (Spec. 114-
49/50). Jan. 15.

Submarine Power Cable, 33,000
Volt., for Newcastle City Coun-
cil. Extended to Jan. 2.

VICTORIA

**GOVERNMENT RAILWAYS
DEPARTMENT.**

Circuit Controllers, for Point
Layouts. Jan. 17.

Flashing Light Highway Cross-
ing Signals. Jan. 10.

Panel Vans. Dec. 20.

Portable Huts, 10 ft. x 8 ft. Dec.
20.

Semi-Automatic Welding Plants.
Jan. 10.

Shaping Machines. Dec. 20.

CITY OF MELBOURNE.

Electricity Meters. Jan. 8.

**DEPARTMENT OF PUBLIC
WORKS.**

Kerosene Hot-water Service, for
Lorne. Dec. 19.

Pumping Set, for Healesville.
Dec. 19.

Septic Tank and New Water
Service, etc., for State School,
Healesville. Dec. 12.

DEPARTMENT OF SUPPLY.

Electronic Test Equipment. Dec.
21.

Precision Grinding Machines.
Dec. 21.

Plate Rolling Machine. Dec. 21.

Radio Plant and Equipment.
Dec. 19.

Tools and Gauges. Dec. 21.

Wireless Masts. Dec. 19.

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Armoured Cable, Flexible Trail-
ing Cable and Copper Conductors.
Dec. 19.

Equipment, for Field Servicing
of Mobile Construction Plant, with
Oils, Grease, Fuels, etc. Dec. 19.

Faucet Sluice Valves (25), 5 in.
dia. Dec. 19.

Hydraulically Operated Tilt and
Angle Dozer Attachment to D.D.H.
Tractor. Dec. 19.

Portable Air Compressors (6).
Dec. 19.

Tractor, with Rotary Cutting
Attachment. Dec. 19.

(Turn to page 86.)

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your staff, who dealt with the matter, my appreciation of the effort they
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CURRENT TENDERS - contd.

Tyres and Tubes, for Motor
Trucks, Graders, Cranes and
Scoops. Dec. 19.

MELBOURNE HARBOUR TRUST COMMISSION.

Buildozer. Jan. 19.
Crawler Crane, 7½ ton. Jan. 19.
Footpath Roller, 35-40 cwt. Jan.
19.
Fork-lift Trucks. Jan. 19.

MELBOURNE AND METRO- POLITAN TRAMWAYS BOARD.

Portable Concrete Mixer (Ten-
der 1809). Dec. 18.

STATE ELECTRICITY COM- MISSION.

Automatic Telephone Instru-
ments (Spec. 50-51/176). Jan. 24.
Heavy Duty Scrub Clearing Ma-
chine (Spec. 50-51/173). Dec. 20.
Paper and Varnished Cambric
Insulated Cable. Feb. 7.
Polyphase A.C. Kilowatt Hour
Meters. Jan. 3.
Portable Generating Set. Jan.
20.
Steel Cored Aluminium Conduc-
tor. Feb. 28.
Switchgear and Accessories,
3,600-V. (Spec. 50-51/180). Feb.
14.
Telephone Cable Loading Coil
Assemblies (Spec. 50-51/174). Jan.
31.
Teleprinter Machines (Spec. 50-
51/119). Jan. 17.
Toroidal Iron Dust Cores (Spec.
50-51/175). Jan. 24.
Traction Batteries (Spec. 50-
51/181). Dec. 20.
Transformers and Spares (two),
(Spec. 50-51/168). Feb. 7.

MISCELLANEOUS.

Front-End Loader, for Shire of
Rosedale. Dec. 18.
High Tension Transformers,
22,000-volt., for Shire of Kerang.
Jan. 15.
New Crawler Tractors (6), 40 to
60 Drawbar H.P., at Sea Level,
powered by Diesel Engine, for
Snowy Mountains Hydro-Electric
Authority. Dec. 19.

QUEENSLAND

BRISBANE CITY COUNCIL.

Circulating Water Pumps, for
Tennyson Power House. Jan. 12.
Electrical Potentiometer; Four-
point portable temperature re-
corder. Jan. 17.
Mechanical Circulating Water
Screens, for Tennyson Power
House. Jan. 12.
Porcelain Insulators and Hard-
ware (Con. E.25/1950). Jan. 12.

(Turn to page 87.)

FACTORY EQUIPMENT

"BURNER" Lathe Chucks
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"DING DONG" Hack Saw Blades
"MYFORD" Lathes
"COLEY" Thermometers
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CURRENT TENDERS — contd.

Salt Glazed Ware Pipes and Fittings (Con. W79/1950). Dec. 22.

Storage Reservoir (one million gallon), at Grovely (Con. W82/1950). Dec. 22.

DEPARTMENT OF PUBLIC WORKS.

Crane, 15 ton, hand-operated. Dec. 18.

Overhead Travelling Crane, hand-operated, 15-ton, for Hydro-Electric Power House, Somerset Dam. Dec. 18.

Passenger Lift, for new Government Offices, Rockhampton. Jan. 17.

GOVERNMENT RAILWAYS DEPARTMENT.

Low-sided Steel Goods Wagons (1,000), Class "FJS". Jan. 31.

STATE ELECTRICITY COMMISSION.

Coal Burning Gas Producers (3), (Spec. 227). Jan. 31.

Evaporator, for Boiler Feed Makeup (Spec. 250). Jan. 24.

Oil Circuit-Breakers, 66kV, for Sub-Stations (Spec. 218). Feb. 21.

Prefabricated Timber of Metal Frames Buildings (Spec. 248). Jan. 10.

Switchgear: (132, 66, 33, 11 & 5 kV), Relays and Carrier Current Communication Equipment (Spec. T.F./3). Extended to Jan. 17.

Wood Burning Gas Producers (Spec. 247). Dec. 20.

STATE STORES BOARD.

Bolts and Nuts, for various Government Departments (Tender A.162). Dec. 19.

Mild Steel Angles, Plate and Flats (Tender A.165). Jan. 4.

Structural Steel, etc. Dec. 18.

MISCELLANEOUS.

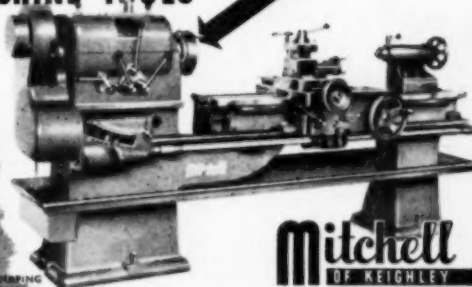
Centrifugal Pump, Direct Electric-driven, for Townsville Regional Electricity Board. Dec. 27.

Fabricated Structural Steel Towers (Spec. 197/50), for Townsville Regional Electricity Board. Extended to Jan. 15.

Plan Printing Machines, for Cairns Regional Electricity Board (Con. L50/21). Jan. 23.

Switchgear, for Cairns Regional Electricity Board (Spec. L50/17). Extended to Jan. 17.

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Sluice Valves (Sch. 582A). Dec. 21.

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Auxiliary generating sets, 625 kVA, two (Con. 169). Para. also

Auckland, Christchurch, London, Paris, Washington, and Montreal. March 13.

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Complete Cableway Head Tower Travelling Winch, and a Complete Tail Tower Travelling Winch (C.E. 230). Jan. 24.

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Construction winches, heavy duty, 2 ton, 12; 7½ ton, four, £10,650. H. A. J. De Wolf & Sons. Excavator and spare parts, 1 cu. yd., Smith, £11,000. Victorian Industrial Sales & Service Pty. Ltd. Junction or link boxes, 40,000, £6,000. L. Watkins Engineers Pty. Ltd.

Drilling for brown coal investigations, Gippsland area, sch. rates. Barry and Haire; W. L. Sides & Son Pty. Ltd.

Cadmium copper conductors and trolley wire, £12,341. Brown & Dureau Ltd.; £14,452. Liverpool Electric Cable Co. Ltd.

(Turn to page 88.)



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Link belt, 2 cu. yd. cap. excavator and spare parts, £11,543. Tutt, Bryant (Vic.) Pty. Ltd.

GOVERNMENT RAILWAYS DEPARTMENT.

Galvanised steel wire (Sch. 14). Titan Nail & Wire Pty. Ltd., The Aust. Wire Rope Works Pty. Ltd.

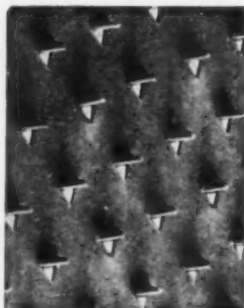
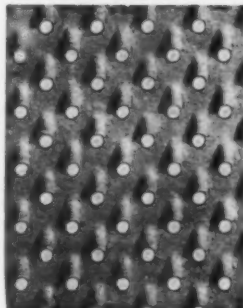
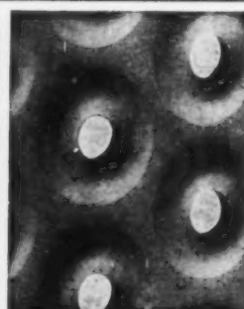
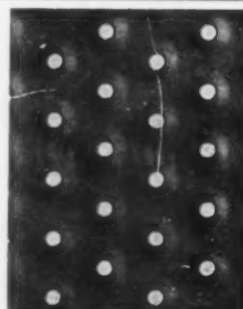
Rylands Bros. (Aust.) Pty. Ltd. Rates.

Methylated spirit and turpentine substitute (Sch. 38). J. L. Leonard Pty. Ltd., Vacuum Oil Co. Pty. Ltd. Rates.

Industrial gases and calcium carbide (Sch. 39). Miller & Co. (Machy.), Pty. Ltd., C.I.G. (Vic.) Pty. Ltd., Noyes Bros. (Melb.) Ltd., Carbs Dry Ice (Aust.) Ltd., Thos. Mitchell & Co. Pty. Ltd. Rates.

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Ventilation System, at P.M.G. Workshops, Alexandria. Jan. 16.

Wrought Iron Railing, at Hickson Road, Sydney. Jan. 16.

GOVERNMENT RAILWAYS DEPARTMENT.

Driving Journal Compound. Dec. 28.

Oil, for Car and Waggon Axles. Dec. 28.

Oil, for Locomotive Engine Bearings. Dec. 28.

Oil, for Superheated Steam Cylinders. Dec. 28.

NEW SOUTH WALES

DEPARTMENT OF SUPPLY.

Abrasive Cloth, Purchase of, from Randwick. Dec. 22.

Accumulators. Dec. 19.

Flattening Machine. Dec. 19.

Rifles, 22, Purchase of, from Liverpool. Dec. 19.

DEPARTMENT OF PUBLIC WORKS.

Air Compressors, Portable (2). Jan. 3.

Steel Lockers (18). Jan. 3.

Wood Thickening Machines (2). Jan. 5.

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Equipment, for Electrification of
Railway Tracks between Parra-
matta and Lithgow (Spec. 1275).
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DEPARTMENT OF SUPPLY.
Gear Box Units. Dec. 21.

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(Continued from page 25.)

sealed window units composed of
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metal spacer and a lin. cell of
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by providing thermal insulation
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restrict condensation and stop
cold down-draughts. They reduce
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Tender Box, Room 504A, 5th
Floor, Railway House, 19 York
Street, Sydney, or posted to that
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Wednesday, 24th January, 1951—
12 noon.

For the manufacture, supply,
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Goods Lifts and two Passenger
Lifts, for Lake Macquarie Power
Station, to Specification No. 1289.
Tender forms (Specifications, price
7/6 each) and further particulars
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3 units for King's Cross Section-
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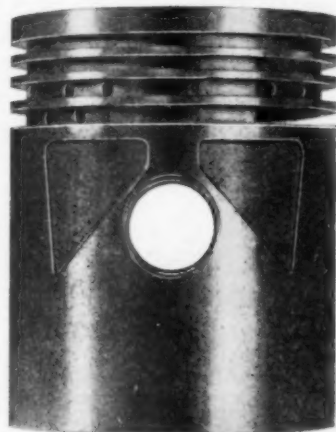
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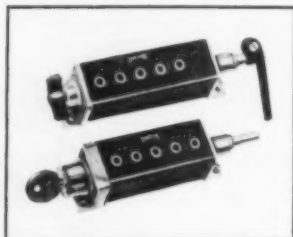
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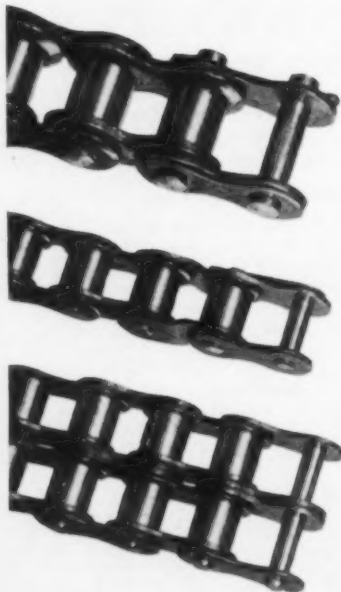
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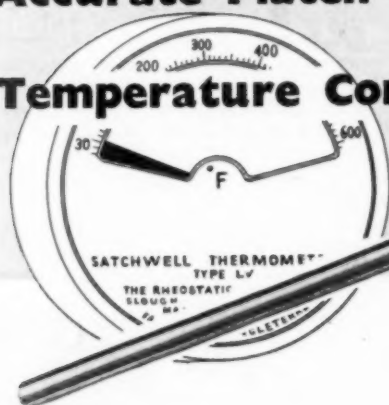
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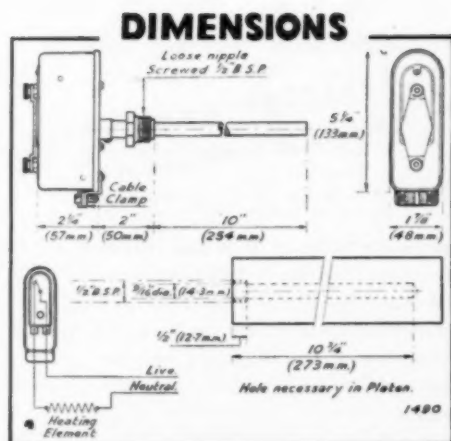
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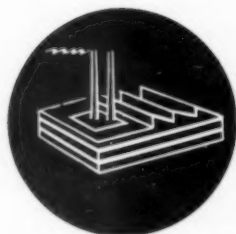
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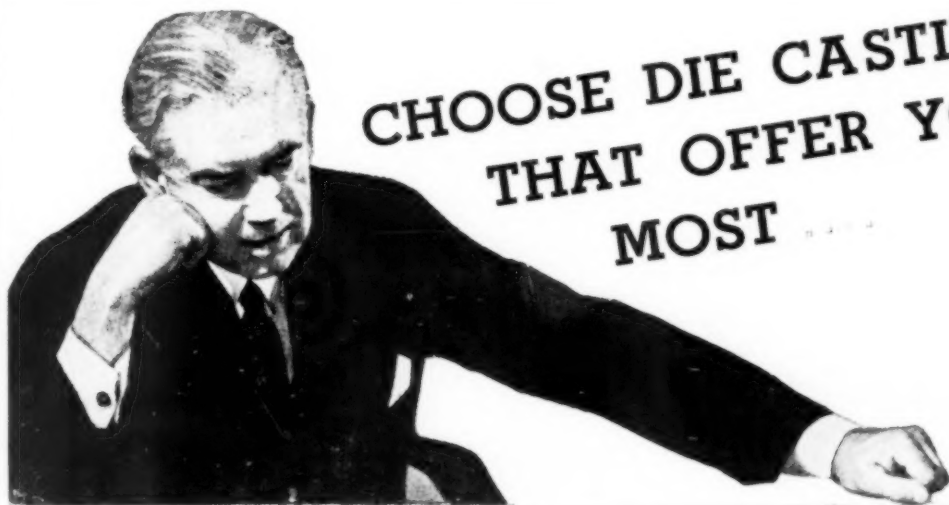
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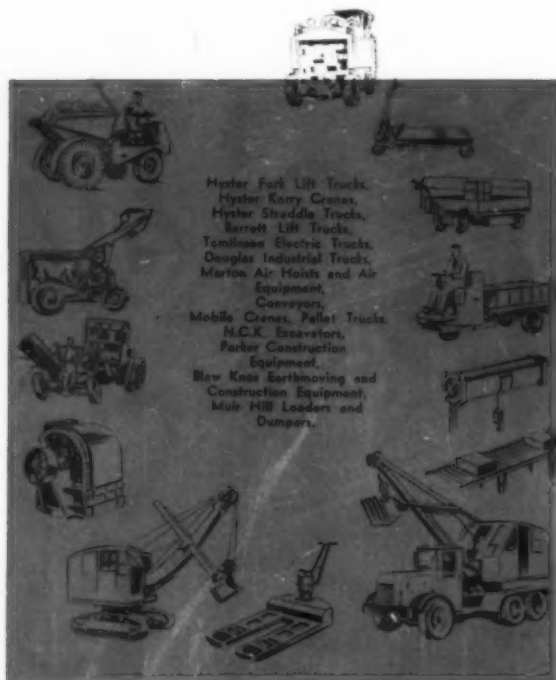


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